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# China Report

## AGRICULTURE

No. 221

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# CHINA REPORT

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## EXHORTATION FOR RURAL ECONOMIC DIVERSIFICATION ISSUED

Shijiazhuang HEBEI RIBAO in Chinese 15 Jun 82 p 1

[Article: "New Prospects Must Be Opened For Rural Economic Diversification"]

[Text] Not long ago when Comrade Hu Yaobang made an inspection of Baoding Prefecture in Hebei Province, he noted that "Two changes have to be made in agriculture, the first of which is a change from sole attention to grain to simultaneous attention to economic diversification, and the second of which is a change from sole building of water conservancy to simultaneous attention to water and soil conservation and improving soil cover." This important instruction from Comrade Hu Yaobang is a scientific distillation of agricultural development since founding of the People's Republic. It possesses major significance for accelerated agricultural development and the flourishing of the rural economy so that the peasants can become prosperous with all possible speed. We must conscientiously put into practice Comrade Hu Yaobang's major instruction, opening new prospects for the province's economic diversification.

Since the Third Plenary Session of the 11th Party Central Committee, as a result of thoroughgoing criticism of "leftism," readjustment of agricultural crop patterns, and implementation of the party's various rural economic policies, the province's economic diversification has seen very great growth in the farming industry, in the aquatic breeding industry, in processing industries, and in industrial sideline occupations. The broad masses of peasants have increased earnings, the rural economy has become lively, city and countryside markets flourish, and the rural situation is very encouraging. However, it must be realized that the province's development of economic diversification is merely in an incipient stage, and is a long way from meeting the demands of higher authority or developing to the extent to which it can develop. First of all, the guiding mentality at all levels in the province has yet to change completely from sole attention to grain to simultaneous attention to economic diversification, and economic diversification has not yet been elevated to the important position it should occupy. Second, following institution of systems of responsibility for production, a large portion of surplus rural labor has not yet been properly provided for. Third, in mountain regions, the plains, and on water surfaces alike, the potential for economic diversification is still a long way from being tapped. So one might say that economic diversification has not been far off the mark; it has been a long distance from the mark. The major task for all levels of leaders at the present time is to rapidly effect a genuine change in the guiding mentality from sole attention to grain to simultaneous attention to economic diversification, with good planning and strengthening of leadership so that economic diversification in the province will have greater development from its existing base.

If there is to be a change from sole attention to grain to simultaneous attention to economic diversification to open new prospects for economic diversification, horizons will have to be broadened and avenues opened, the collective and individuals rising together, and staples and non staples being given attention together. The province's resources are fairly bountiful. We should not only look at the 10 to 20 percent of mountainlands. On the plains, we should not only look at the limited amount of cultivated land, but look even more at the large quantity of idle wastelands and water surfaces. We should not only look at the output value and earnings from single production, but should look even more at the increased output value and greater earnings from multiple processing. In a word, our horizons have to be expanded to the vast world. In terms of the province as a whole, full use should be made of skilled craftsmen to teach apprentices to serve a role in the transfer of skills. A campaign should be organized for skilled people to teach large numbers of people and for large numbers of people to learn from skilled persons to transfer the large quantities of surplus workforces into economic diversification to engage in the trades and industries of farming, raising of aquatic products, processing industries, and service trades so that each person is used to the full extent of his abilities. Second is full development for use of the province's more than 62 million mu of barren mountains and wasteland slopes, its more than 2.9 million mu of desert wastes and saline-alkaline land, its more than 1.2 million mu of fresh water surfaces and 860,000 mu of coastal shallows, and all resources that have not yet found use or have not yet found full use so that the land will be used to the full extent of its strength. Third is efforts to develop brand name goods, commodities in seriously short supply, agricultural and sideline product processing, and service trades for large and medium size cities and small cities and towns. Where conditions permit, efforts should be made for multiple increases in output value. Things that can be used should be used to their fullest extent. Fourth is that while continuing to give attention to centralized collective administration, sideline occupations that lend themselves to being done by commune member households should be handled by individual commune member households for vigorous development of household sideline occupations. Production brigades and production teams should adapt general methods to individual households to help in the formulation of plans, deciding on things to be done, teaching skills, finding markets, and in formulating specific regulations helpful to development of household sideline occupations. This is one important aspect of the widening of avenues of economic diversification. Fifth is attention to good selection of breakthrough points. Broadly speaking, we want all around development of economic diversification. However, in terms of an individual county, an individual commune, or an individual production brigade, attention should be directed to one or several local things that can be readily handled, use made of focal points to spur on the whole.

Yet another important issue in active development of economic diversification is the need to correctly handle the relationship between grain production and economic diversification, with no relaxation of grain production under any circumstances. The experiences of history have told us that only when increases in grain production are assured is it possible to lay a firm foundation for development of economic diversification, and that growth of economic diversification can, in turn, provide more advantageous conditions for increased production of grain. We definitely must fully understand this dialectic relationship; we must not use a decrease in grain to increase economic diversification, but rather should blaze a new trail that both assures year by year increases in grain output and that can also greatly increase economic diversification to achieve a takeoff in both grain and economic diversification.

The establishment and perfection of various forms of responsibility systems is a key in arousing the enthusiasm for economic diversification of commune members. The practice during the past several years of various forms of agricultural responsibility systems has universally aroused the serious attention of the entire party and has achieved very good results. However, systems of responsibility in commune and brigade industrial sideline occupations have lagged behind agriculture. Henceforth, while perfecting and improving agricultural responsibility systems, all jurisdictions should devote major efforts to economic diversification responsibility systems, contracting to specialized teams, specialized units, and specialized households economic diversification tasks. It should be noted here that in commune and brigade enterprise contracting, it is necessary to adhere to the collective nature with most benefits reverting to the collective. There can be no nominal contracting that is converted in reality to small number of people having ownership. Wherever a small number of people have taken possession in the past, collective operations must be resolutely revived and thereafter a suitable economic responsibility system should be built and perfected by proceeding from a strong and solid collective economy. In the development of sideline occupations, there should be vigorous development of specialized households and of all kinds of collective groups; not only should operations by combinations of households be advocated, but even broad combinations that transcend commune and brigade lines should be allowed to develop.

The areas on which economic diversification bear are very broad, and under the centralized direction of the party, all units in all jurisdictions should work together to give vigorous support and assistance to communes, brigades, and the broad masses of commune members in every way. All levels of CCP committees and governments and related units should gunuinely strengthen concrete leadership, help communes and brigades institute the "two changes," and further formulate plans for development of economic diversification. They should conscientiously put into effect the principles of taking the planned economy as the key link in agriculture with market regulation playing a supplementary role." They should indoctrinate the broad masses of cadres and commune members in concurrent concern for the interests of the country, the collective and individuals, to link present interests and long range interests, to do centralized planning, to have all around development, to enliven the economy, and to increase effectiveness. They should teach cadres and commune members to adhere to a socialist orientation and to take the road of getting rich through labor, to not contravene national policies and laws, and to strike down evil influences on the country and the people so as to have healthy development of economic diversification.

In the process of developing economic diversification, scientific and technical knowledge should be spread for the gradual formation of a huge mass science and technology corps. It is necessary, first of all, to adopt advanced techniques for use, to promote fine varieties, and to prevent and control diseases and insect pests, to create name brands through economic diversification, to insure quality, increase confidence, and meet the needs of society. State owned and collective commercial units should do a good job of market forecasting, and provide commodity information, to help the peasants arrange production in a rational way and prevent large ups and downs. In addition it is necessary to open flow channels, to open markets at home and abroad for the products of economic diversification, and strive to decide production on the basis of the market so that goods flow freely.

We believe that if only the people of the province rally their spirits, emancipate their mentalities, play up strengths and play down weaknesses, make the most of advantages, each trade and industry striving together, rural economic diversification in the province is bound to be able to rapidly open new prospects.

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CSO: 4007/466

NOTICE ON PREVENTION OF COTTON DISEASES PUBLISHED

Shijiazhuang HEBEI RIBAO in Chinese 13 Jun 82 p 1

[Article: Hebei Provincial People's Government Notice On Conscientious Launching of Survey Work on Verticillium and Fusarium Wilt of Cotton"]

[Text] (Not Otherwise Circulated)

Government Administrative Offices in All Prefectures:

In order to prevent the spread of damage caused by cotton verticillium and fusarium wilt disease, all prefectures are to conscientiously inspect the occurrence of disease damage during the period of cotton growth.

1. Leadership comrades concerned in all prefectures and countries are to act personally to organize personnel in agricultural, supply and marketing, and cotton buying units to give active attention to this work. They are to do a good job of propaganda education and technical training to arouse the masses to engage in the survey.

2. The survey is to be carried out at two different times, the first time being the cotton's early budding stage (in June) and the second time being the boll stage (in August). The area of disease occurence and the extent of disease occurence are to be carefully checked, and areas of heavy incidence, light incidence, patchy incidence, and on incidence delineated. Survey results are to be promptly reported to the Provincial Department of Agriculture.

3. The survey is to serve as the basis for planning all around prevention and control. Areas of heavy incidence are to be clearly recorded so that next year reverse cropping or planting of resistant varieties can be done. In areas of light incidence or patchy incidence, diseased plants should be dug up at once and the soil disinfected. In disease-free areas, good protection work should be done, disease-free fine varieties bred, a strict quarantine system instituted, and the spread of diseased seeds and bacteria-carrying beancake fertilizer to disease-free areas controlled.

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## BRIEFS

SUBTERRANEAN RIVER DISCOVERED--Heilongjiang Province has discovered for the first time a subterranean river. This was recently identified factually after several years of survey and prospecting by provincial metallurgical and geological workers. The subterranean river, located in the Xiling District of the city of Yichun, measures 3 kilometers in total length. The source of the river is located about 50 meters underground, with its river outlet meeting the southern river bank of the small Xilin river valley. This subterranean river is rich in griotte, and has a complicated geologic structure. The area close to the river has dense forest, flourishing terrene water systems, and sufficient rainfall. During the dry season, the rainfall has a daily flow capacity of 9,000 cubic meters, and reaches more than 40,000 cubic meters daily during the wet season. The departments concerned have determined that this subterranean river has water of superior quality and reliable flow capacity, making it an ideal water source for industrial and civil use. Furthermore, the river is near Xilin Steel Mill. This has a rather important economic significance to the tight water supply situation that the steel mill faces. [Text] [Harbin HEILONGJIANG RIBAO 13 Jul 82 p 1]

CSO: 4007/530

## DEVELOPMENT OF HOG-RAISING INDUSTRY NOTED

Beijing RENMIN RIBAO in Chinese 4 Jul 82 p 2

[Text] The hog-raising industry continues to develop in Siping Prefecture, Jilin Province. As of the end of the first quarter of this year, the prefecture's live hog population totaled somewhat more than 1.36 million head, a 4.38 percent increase over the same period last year. Three hundred thousand head were removed from inventory, a 9.24 percent increase over the same period last year. This included 54,800 head sold to the state, a 6.53 percent increase over the same period last year.

Siping Prefecture is an advanced area for hog-raising in Jilin Province. This year live hog production has continued to develop throughout the prefecture, mostly through reliance on policies to arouse the enthusiasm of the peasants for raising hogs, and reliance on science to improve hog-raising techniques. This year the prefecture universally established and perfected various kinds of hog-raising production responsibility systems. Some counties also enacted bonus systems for raising hogs. Lishu County, for example, stipulated that the countywould give a bonus of 200 yuan to any commune that raised one hog per person. If the commune sold one commodity hog per household, the county would give the commune a 300 yuan bonus. In this way, it aroused the enthusiasm of both the collective and of individuals for raising hogs.

In order to give real help to hog-raising households in solving problems of obtaining livestock feed; acting in accordance with regulations, the entire prefecture apportioned an overwhelming majority of the animal fodder raising land to hog-raising households. Some production teams also farmed a certain amount of collectively own feed producing land or took over some reserve livestock grain for use in preparing feed for developing live hog production during the current year. By way of encouraging commune members to raise more hogs, Siping City stipulated that for every boar or sow raised by vegetable growing peasants in the suburbs, in addition to the 250 jin of concentrated feed provided by production teams, an additional 200 jin of mixed feeds would be provided. For every live hog raised by peasants growing nothing but vegetables and to whom no land had been apportioned for the growing of livestock feed, 500 jin of mixed feed would be provided.

A full supply of hog sources is one of the major requirements for development of the hog-raising industry. Siping Prefecture conscientiously took in hand the job of state farm and collective raising of boars and sows. The prefecture has 6 state hog-raising farms, which so far this year have bred 1,400 stud hogs, which have been sold to communes, brigades, specialized households, and key households for raising. Quite a few communes and brigades have given attention to the consolidation and development of collective hog-raising. As a result of having done a good job in collective hog-raising, in having solved its problems with sources of hogs, in having stabilized shoat prices, and in having raised one hog per person for many years in a row, Shuangyushu Commune in Huaide County made another breakthrough this year. Statistics as of the end of April show the number of live hogs in the commune being fed as 15,500 head, or 0.7 head per person, placing it in first place in the prefecture.

This prefecture has also vigorously promoted scientific techniques for raising pigs, and has bolstered epidemic prevention and disease eradication work. The Prefecture Main Veterinary Station ran a pilot project at Taiping Commune in Lishu County on cooperative prevention and treatment of livestock diseases and the insuring of hogs. The specific method used was for the veterinary station to contract with hog-raising households for epidemic prevention, medical treatment, and cost of hogs (guaranteeing 25 yuan for each hog that died). The hog-raising household paid an annual insurance premium of 2 yuan per hog. Results of the project shows that this method is simple, convenient and workable; veterinarians were satisfied and the masses were delighted. During this year, the method has been promoted and put into effect everywhere throughout the prefecture.

In order to solve problems of "difficulty in selling hogs," in early February this year, commercial units at all levels signed assigned hog-raising and assigned purchase agreements with hog-raising households. The plan's assigned quota for the prefecture was 2.14 million head and the assigned procurement quota was 460,000 head. Agreements were signed on this basis. If hog-raising households did not sell their hogs at the time stipulated in the agreement, for each days delay in selling, they had to pay a 0.10 yuan damages fee to the commercial unit. For each day the commercial unit was late in accepting delivery, it had to give the hog-raising household a fee subsidy fee of 0.30 yuan per head per day. Everybody called this agreement "double insurance," and it made hog-raising households feel as though they had swallowed "tranquilizers."

9432
CSO: 4007/468

# MEASURES TO FIGHT BACTERIAL BLIGHT OF RICE DISCUSSED

Xian SHAANXI RIBAO in Chinese 11 Apr 82 p 2

[Article: "Remarkable Success in Prevention and Control of Bacterial Blight of Rice in Hanzhong Prefecture. Production Area Quarantine and Prevention and Control of the Spread of Diseases and Insect Pest Begun"]

[Text] Plant protection and plant quarantine station science and technology personnel in Hanzhong Prefecture have won striking successes in the prevention and control of paddy rice bacterial blight over large areas.

Beginning in 1980, this plant protection and plant quarantine station set up 655 disease-free bases on more than 350 mu area. Thanks to the painstaking care of technical farm cadres and the masses, 1.68 million jin of blight-free first generation hybrid rice seeds were harvested in the fall of the same year, and more than 17,900 jin of "three lines" rice seeds plus 700,000 jin of conventional rice seeds free of blight were also harvested. These disease-free seeds were planted for open field production in 1981. The diseased field area dropped strikingly, and the extent of damage decreased greatly. Survey statistics show that as a result of the spread throughout the prefecture's producing areas of the single measure of quarantine to prevent the spread of disease damage, 6.05 million jin of paddy was saved in the same year. After summarizing experiences, in 1981 they formulated "Trial Regulations for Hanzhong Prefecture Paddy Rice Seed Producing Area Quarantine," while enlarging to 17,575 mu the disease-free paddy rice base area so as to lay a foundation for further eradication this year of bacterial blight.

The specific methods they used were as follows: (1) Effective inspection to understand the disease situation. During the fall of 1979 8,300 quarantine inspectors were training throughout the prefecture, and 434 communes carried out field inspections so as to clearly delineate the dividing line between disease and disease-free zones as data for formulating prevention and control measures. (2) Adoption of multiple measures for the breeding of disease-free seeds. In establishing disease-free fine variety breeding bases, they followed quarantine requirements, using "dikushuang" to soak the chosen rice seeds prior to planting them. In propagating seedlings and caring for them in open fields, strict attention was given to proper watering, fertilization, and use of pesticides to prevent outbreaks of bacterial blight. (3) Implementation of quarantine in producing areas and promotion of disease-free seeds for sale. Before the rice was harvested, quarantine personnel from plant protection units and science and technology personnel from fine variety breeding units conducted joint quarantines of producing areas. In production teams where no bacterial blight had occurred, quarantine requirement certificates were signed and issued in the fields and procurement contracts signed on the basis of the area involved. Following harvest of the rice, seed units became responsible for procurement, storage, and looking after the seeds. Before growing seedlings in the following year, disease-free seeds were taken, according to disease prevention plans, to disease-free areas or to communes and brigades lacking seeds in diseased areas where they were planted to put an end to the source of disease bacteria.

9432
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# SCIENTIFIC FARMING PRACTICES DEMONSTRATED OVER WIDE AREAS

Xian SHAANXI RIBAO in Chinese 9 Apr 82 p 1

[Article by Xinhua She Correspondent Zhao Zhixiang [6392 1807 4382] and Xinhua She Reporter Dai Guoqiang [2071 0948 1730]: "Cadres Effectively Farm Model Fields to Promote New Agricultural Techniques. Yan'an and Yulin Prefectures Use Representative Demonstrations to Guide Scientific Farming"]

[Text] Beginning with this year's spring farming preparations, prefecture county, and commune party and government cadres, and scientific and technical personnel in Yan'an and Yulin prefectures in Shaanxi Province will farm model fields in concert with the peasant masses, using the method of representative demonstrations to promote new agricultural techniques and provide instruction in scientific farming. Right now the model fields in these two prefectures cover 200,000 mu.

Just before and after the lunar new year, Yan'an and Yulin prefectures convened conferences of cadres and commune member representatives to summarize experiences and analyze developments. It was generally acknowledged that in a situation in which agricultural production responsibility systems had already been universally established, it was necessary to give attention to the important link of scientific farming. To this end the leadership organizations of the two prefectures decided that beginning with this year's spring farming, cadres would farm model fields, adapting general methods to local situations to spread some effective advanced farming practices. These advanced farming practices were principally as follows: Farming using furrows in river plains areas; horizontal furrow farming on hillsides; and rotational cropping and intercropping of oil-bearing crops, beans, and grass on terraced fields and plains fields.

Before spring sowing began this year, Zhidan County transferred a group of leadership cadres and farm, forestry, and livestock raising technicians to form two work teams, which went to Xinghe Commune in Dongchuan and Jinding Commune in Xichuan to establish two model tracts for the planting of nearly 3,000 mu of model fields. They formed a link with and gave guidance to the eight "lead villages" farmed by the communes within the two tracts. These "lead villages" linked up in turn with the surrounding "scientific and technical households" to promote the aforestated advanced farming methods for spring sowing and the new techniques of earliest possible sowing, reasonably close planting, and fertilizing with a mixture of nitrogenous and phosphate fertilizer. In the planting of 135,700 mu of model fields to millet, soybeans, broom corn millet, oil bearing crops, paddy rice, and wheat prefecture, county and commune cadre in Yulin Prefecture set up prefecture-wide guidance fields and lead fields for the popularization of scientific farming.

For all model tracts and model sites as well as for contracting households within the tracts and sites, technical contracts linked to output were universally signed. Contracts were signed for category 1 model tracts and with contracting households within tracts in Yulin, Mizhi, Zhidan, Yan'an, Fu, and Ganquan counties (or municipalities), and contracts were signed by all communes at model sites and by contracting households. The contracts stipulated the new techniques, the new varieties, and the farming techniques that were to be promoted, with rewards being offered for overfulfillment, any reductions in output to be made up by commune and county promoting units. In addition, county and commune model tracts were responsible for teaching technical knowledge and for the training of technical mainstay cadres. Before spring sowing began, Yan'an and Yulin prefectures trained more than 30,000 enrollees as technical mainstay cadres.

Right now an upsurge has been sparked in spring plowing and production in northern Shaanxi. As of mid-March, plowing and harrowing of almost 300,000 mu has been substantially completed in Yan'an and Yulin prefectures, and most of the barnyard manure to be used as base fertilizer for the fields had been sent to the model fields. Statistics show that the superb quality barnyard manure made ready for spring sowing in the two prefectures amounts to more than 100 million dan, a 20 percent increase over last year.

9432
CSO: 4007/411

# PRACTICAL SCIENTIFIC FARMING EMPHASIZED

Jinan DAZHONG RIBAO in Chinese 17 Apr 82 p 1

[Article: "Linyi Prefecture Gives Positive Attention to Agricultural Science and Technology Work. Achievements Scored in Agricultural Research, Spread of Techniques, and Scientific and Technical Education"]

[Text] Linyi Prefecture has given positive attention to agricultural science and technology work to score quite a few achievements in recent years in agricultural research, the spread of techniques and scientific and technical education.

Statistics show 136 research achievements for the prefecture as a whole, including 26 of which were of fairly high level, had fairly great economic benefits, and were worth promoting. One example was a method for the prevention and control of peanut green wilt, which was effectively able to control disease damage and increase yields for an increase of about 50 jin per mu, all conditions being equal. Experiments with bumper yields from young Chinese chestnut trees have brought yields of more than 1,000 jin per mu from small areas in Fei County. Following changes for the better, many old trees that had formerly virtually stopped bearing are now universally producing fruit, yields raising from the former 5 or 6 jin to about 60 jin, or a maximum of more than 130 jin. The Cangshan County Agricultural Institute carefully selected fine varieties of garlic, planted it reasonably close, scientifically fertilized it, used plastic sheeting, and employed such new farming techniques for yields last year of 3,764.8 jin per mu of fresh garlic bulbs and 1,320 jin of garlic flowers and stems, more than 80 percent more than from fields in general.

In the field of the spread of techniques, as a result of the selection of techniques that could gradually be spread from key points to wide areas, economic results were also very remarkable. An example was tackling the problem with black sajong soil. As a result of small area experiments conducted by the Wangqiao Commune Agricultural Science Station, yields rose from 278 jin per mu in 1975 to 945 jin per mu. Now results have been spread to more than 100,000 jin throughout the county. Ying County's experiences in building quick growing, high output forests were also spread to Linyi, Tancheng, and Cangshan counties. Last year the entire prefecture established this quick growing, high yield method for more than 110,000 mu of forests, and this year the area is to increase to more than 200 mu. In order to meet the needs of the broad masses of peasants to study science and use science, throughout the prefecture after-hours technical education has been actively launched. Now a vocational school corps of 15,000 teachers has been established, and more than 500,000 people are engaged in study. Training is in the form of year-round classes, seasonal classes, short training classes, and technical lectures. Year-round techncial training classes follows a 3 or 4 year educational system. When the period of training has been completed, if test results meet requirements, a diploma is issued. Those with outstanding achievements are designated "peasant technicians."

Recently Linyi Prefecture held a conference for the exchange of scientific and technical experiences at which 153 advanced collectives and individuals who had made achievements in research and the spread of techniques were given awards and commendations.

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CSO: 4007/411

# STEPS TO INCREASE HOG PRODUCTION REPORTED

Beijing RENMIN RIBAO in Chinese 4 Jul 82 p 2

[Text] The Sichuan Provincial People's Government recently approved and sent forward the Provincial Animal Husbandry Bureau's report requiring all municipalities, zhous, and counties in the province firmly to take in hand the production of sows to increase the source of hogs.

Recently a sustained decline has occurred in the number of sows in inventory in some key commodity hog producing areas of Sichuan Province, and the problem of a shortage of sources of hogs is a fairly prominent one. In Chengdu Municipality and in Wenjiang, Neijiang, Jinyang, and Nanchong prefectures, the number of sows capable of reproducing decined during the first quarter of thsi year by 12.6 percent as compared with the same period last year. In some prefectures and counties, sows account for only between 4 and 5 percent of the total hog population. The shortage of sources of hogs has already produced bad effects on development of hog-raising, and unless urgent action is taken to solve this problem, it will adversely affect the province's total output of pork.

By way of increasing sources of hogs, this province's animal husbandry units have required that all jurisdictions, first of all, raise the sows they already have, increase the shoat production rate, and aim for an average one more birth and one less death of shoats per sow per year. In this way it will be possible to increase the number of shoats produced by the equivalent of 600,000 head of sows and rapidly increase the number of sows in inventory. The number of sows in inventory throughout the province should not be less than 7 percent of the total hog population. On the basis of requirements all jurisdictions should adapt general methods to local situations to set a proper proportion of sows to be bred. Development of sow production requires bringing into play the initiative of both collectives and commune member households for raising sows, every effort being made to have production teams do the breeding and households do the raising, with further implementation of a bonus policy for the raising of sows. Production teams should annually set aside about 300 jin of feed grain per sow or else designate 1/10 or 2/10 mu of land for the raising of feed, make hog-raising a part of commune member contract agreements, take action to provide land for the growing of fodder to feed sows, with the land being taken back by the collective if no sows are raised in a system whereby hogs and land are linked. When sows bear young, state regulations on award sales of grain for production of shoats should be honored. In addition to taking action to produce sows, attention should also be directed to the promotion of fine hog species so that hybrid hogs in the province will increase from this year's 20 percent to 25 percent of the hog population.

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## PROVINCE STRIVES TO INCREASE HOG PRODUCTION

Hangzhou ZHEIJIANG RIBAO 24 Jun 82 p 1

[Text] The hog production situation in Zhejinag Province has been heartening throughout the year. As of the end of May the number of live hogs in inventory totaled 12.69 million head for a faster recovery rate than last year. State procurement of live hog throughout the province during the previous 5 months was 4.4 million head, a 2.4 percent increase over the same period last year. Markets within the province have liberalized pork supplies, and in most municipalities and counties supplies are unlimited. This has been the result of all levels of government having strengthened leadership in hog-raising, of diligent implementation of policies for commune and brigade hog-raising, and active fulfillment of live hog assigned procurement quotas.

The once a year small peak period in hog purchases has arrived under conditions of a gradual resurgence of live hog production. In recent days, foodstuff stations have been busy with buying and busy with selling, and cold storage plants have been very busy with butchering. It has been estimated that during June and July quantities purchased will approach last year's levels, and quite a few hog raising households are concerned lest this year become one of "difficulty in selling hogs."

It should be realized that hog-raising in Zhejiang Province is rather good this year, but it has not yet reached an all-time high. In some cities and villages, pork supplies are somewhat short, and both export and light industry units have increased required amounts. So in terms of the year as a whole and over the long term, there is no hog glut, but rather a need for continued production. As far as the concentrated sales of hogs during the current small peak season are concerned, this results from a conflict between seasons and areas. Commercial units have investigated and studied and are fully prepared to meet this situation. Plans have been readied for each of the links of procurement, transportation, butchering, storage, and marketing. As compared with last year, conditions favoring solution to "difficulty in selling hogs" are numerous. One is that cold storage capacity has been greatly increased. In addition to the existing more than 27,000 tons storage capacity in the province, 4 large and medium-size cold storage lockers have been built. Two of them at Jinhua and Ningbo have formally gone into service, and before the end of June the one at Jiaxing will be ready to store meat. One cold storage locker at Hangzhou will be used following major repairs. The total amount of pork that can be stored will amount to about 400,000 live hogs. Small cold storage lockers in some places can also function as "reservoirs" for the overflow. Second is liberalization of pork supplies in cities and the countryside. In Hangzhou, Ningbo and seven prefectures, there is unrestricted supply. Accompanying an increase in meat consumption by people in cities and the countryside has been more skinning and rendering of fat, and more processing of meat products, which has brought about an increase in quantities marketed. Third has been an increase in export requirements and the amount of pork used by light industry. Of course, in view of differences between one area and another in the speed of development of live hog production, as well as differences in patterns of sales and operating conditions, the problem of "difficulty in selling hogs" positively cannot be taken lightly.

During the small peak period of live hog procurement, what can be done to prevent occurrence of a situation of "difficulty in selling hogs"?

1. Reliance on the Active Efforts of Staff and Workers of Units Dealing in Foodstuffs. As far as staff and workers of units dealing in foodstuffs are concerned, if they do a good job of live hog procurement during the small peak period they will have taken the initiative for the year as a whole. In purchasing live hogs the experiences of Dongyang and Yiwu Counties should be promoted for "viewing hogs from door to door, issuing certificates as meeting specifications, fixing times and fixing places, and appointments to make sales." In light of the concentrated offerings for sale, the number of network outlet points have to be increased, the number of times for purchase in a given period increased, and early and late purchases made so that the pigs to be purchased will be purchased. In order to buy more pigs, it is necessary to sell more pork. This year villages have had a bumper spring grain harvest and quantity of pork consumption has increased. Marketing plans should be actively fulfilled, and in places where live hog purchases overfulfill plan, more pork should be made available in an effort to avoid occurence of a situation of "difficulty in selling pork." Purchasing units should also fully tap storage potential, borrowing some old storage lockers and erecting some simple storage sheds to do the utmost in keeping more pork in order to improve pork supplies in villages during the summer harvest and summer planting.

2. Reliance on Close Coordination With Units Concerned. Large and small freezer plants that are "focal points" should seize this "golden season" to tap potential, accept more hogs, slaughter more hogs, and store more hogs. Other light industrial units that use hogs as raw materials should alsl proceed from the overall situation in receiving hogs according to plan. Transportation units should give careful attention to safe hauling to avoid deaths of live hogs so as not to create unnecessary economic losses.

3. Reliance on the Support of the Broad Masses of Commune and Brigade Cadres and on Households Selling Hogs. As peasant living standards have improved and rural systems of responsibility have been implemented, peasant pork consumption has spurted during the time of summer harvest and summer planting; consequently, a staggering of the time of sales of live pork to

the peasants is required, with some pork being kept until late July and August so that it can be slaughtered on the spot and supplied at the appointed time. This way also helps accumulate hog dung to meet the needs of the late rice crop for organic fertilizer. Commercial units have already made a great amount of preparation to purchase live hogs, and the "main door for the purchase of hogs is wide open." The broad masses of peasants need not believe rumors, but should sell their hogs in batches in accordance with the feeding practices in each jurisdiction, and should coordinate with and support units dealing in foodstuffs to do a good job in purchasing hogs.

Solution to "difficulty in selling hogs" bears on stabilizing and promoting live hog production, and on preserving peasant enthusiasm for hog-raising. That it is the concern of all quarters and of the peasants is only as it should be. If reliance is placed on all levels of party and government leaders, with the broad masses of staff and workers in commercial units actively making efforts, and both units concerned and rural communes and brigades giving vigorous support, the situation of "difficulty in selling hogs" during the small peak season in hog procurement can be avoided.

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# RENEWED EMPHASIS ON ORGANIC FERTILIZER NOTED

## Official's Statement

Hangzhou ZHEJIANG RIBAO in Chinese 6 Jun 82 p 1

[Text] "A large volume of investigation materials attest that increased collection and increased use of organic fertilizer are measures of strategic significance for assuring sustained increases in agricultural production, and all levels of leaders should be certain not to treat this as unimportant." This was an observation that Provincial CCP Committee Secretary and Deputy Provincial Governor Chen Zuolin [7115 0155 7207] repeatedly emphasized in a statement he made yesterday to the newspaper's correspondent. He has required rural leaders at all levels throughout the province in the course of organizing forces to diligently grow and care for the early rice crop, use June's advantageous conditions of numerous sources of fertilizer to go all out in stirring the masses to the widespread launching of a summer fertilizer collection campaign to create fine conditions for increased yields from this year's late rice harvest and for a bumper harvest for the year as a whole.

Comrade Chen Zuolin pointed out that basic soil fertility had an extremely great deal to do with how well farm crops grow and, in this sense, to give attention to the soil's basic fertility is the same thing as giving attention to the capital construction of farmlands. Increased collection of fertilizer is no expedient measure, but is rather a basic issue of strategic importance; it is not a trivial matter but an important one. During the 1960's no phosphate fertilizer was applied even to green manure plants in the Hangzhou and Jiaxing lake area, but by the mid-1970's the paddy rice also lacked phosphate. Today some places have also discovered a lack of potash. A small number of places in the area around Ningbo and Shaoxing have recently discovered a lack of zinc. The basic reason for the occurence of such situations is the serious proportional imbalance in fertilization with organic and inorganic fertilizer. The former traditional pattern of using mostly organic fertilizer has undergone great changes. If this continues, there will be no end of trouble in the future. This is the situation in high yield areas, and in low yeild areas the situation is more serious. Today Zhejiang Province has more than 3 million mu of "low yield fields" with normal annual yield as low as 800 jin per mu. The yields from these low yield fields are low because the soil itself is farily seriously abnormal; its structure is very poor, and it is seriously lacking in elements. Unless these fields are improved and their basic fertility increased, they will never get rid of their stigma as low yield fields. Recently I learned at the Jiaxing Prefecture Institute of Agriculture that from 1973 up until last year, in years of fairly severe natural disasters and in years of fine weather alike, their several mu of three crop experimental grainfields produced yields of more than 2,000 jin per mu for 9 consecutive years. Aside from some scientific farming methods used, the main reason for this was the serious importance they attached to equitable fertilization with both organic and inorganic fertilizer, and the serious importance they attached to improving the soil's basic fertility. Were everyone to understand this rationale, they would not regard the collection of fertilizer as "a platitude," but rather would give it attention as a major link in increasing present scientific levels of farming. Happily, today there are some counties that have done just this. We will introduce and promote their experiences in a future issue of the ZHEJIANG RIBAO. The Provincial CCP Committee wishes that all counties would do this.

Comrade Chen Zhling continued by pointing out that it is in the late fall crop that the lack of organic fertilizer shows up particularly seriously, and particularly in the late rice crop. The late rice crop has no green manure as a base fertilizer, and the area on which river mud is used as a base fertilizer has contracted greatly. Units concerned have found that unless decisive measures are taken, possibly 5 to 6 million mu of late ricefields will remain unplowed and unplanted this year. This is one of the major reasons why the output of late rice does not rise or is inconsistent in some counties. In analysing this fall's production situation, simultaneous with full consideration of all advantageous conditions, all levels of party and government leaders must note this point clearly and handle it conscientiously.

Finally Comrade Chen Zuolin placed a specific requirement on all jurisdictions. He said that June is the time for field care of summer crops, and leaders at all levels should take firmly in hand this favorable opportunity to go all out in stirring the masses to enlarge sources of fertilizer, to do mass gathering of mud fertilizer, and to start an upsurge in the increased gathering of mud fertilizer. He required that effective action be taken to increase the planting of sesbania and such summer green manure, and of fine duckweed, to dedicate an area to this, and to encourage the return of rice straw to the fields. In short, cities, towns, and villages should link up in a summer patriotic sanitation movement to run a mass campaign lasting a few score days to gather fertilizer. This would not only solve difficulties with insufficient base fertilizer for the late rice crop, but would make a good beginning in improving the soil's basic fertility. Comrade Chen Zuolin said that in order to make sure that these actions will be rapidly carried out everywhere, we will intensify inspections supervision, and goading, commend the advanced, spur the laggards, and strive for balanced development.

## Two Experts' Views

Hangzhou ZHEJIANG RIBAO in Chinese 8 Jun 82 p 1

[Text] Zhejiang Province's noted soil fertility experts and professors at Zhejiang Agricultural University, Sun Xi [1327 5032], and Yu Zhenyu

[0205 7201 6276] expressed their separate views to the correspondent on the issue of rational fertilization.

The two experts believe that one of the problems existing today in the use of fertilizer is the great importance accorded chemical fertilizers and the slight importance accorded organic fertilizer, which has brought about a situation of proportional imbalance between the two kinds of fertilizer. They said that we should have two goals in fertilizing. One is to provide nutrients to the crops to increase yields; the other is to increase the soil's organic content and to nurture its fertility. Though fertilization with large amounts of chemical fertilizers can win high yields for a time; it does nothing for nurturing soil fertility and may even not be good for the nurturing of soil fertility. Calculations based on isotope tracing shows the utilization rate of chemical nitrogenous fertilizer to be a general 50 percent, and less in the case of phosphate. This shows that most of the nutrients that plants absorb are those that existed in the soil originally, and which are supplied by the soil. Therefore, nurture of soil fertility is a major basic matter, and in nurturing soil fertility, only organic fertilizer can do the job.

The two experts explained that the water, fertilizer, air, and heat in the soil all have to be coordinated if it is to be like a man in the prime of life, alive and strong. Coordination of water, fertilizer, air and heat is done by their conversion by organic fertilizer into humus. Organic fertilizer is like glue that binds soil granules together into "masses" of different sizes to borm a "granular structure." Such a structure resolves the contradiction of mutual jostling of water and air, making the soil friable and increasing its capabilities to conserve fertility and provide fertility. Thus, a good structure is the basis for soil fertility, and organic material is the material foundation for this kinds of structure. Organic material is also an "energy material;" it is food for micro-organisms, and micro-organisms play the "leading role" in promoting a series of soil fertility development processes. For example, soils contain numerous nutrients that plants are unable to absorb directly. For example, the soil content of potash may run from 2.1 to 2.3 percent, which is to say that there will be between 600 to 700 jin per mu. But it is a "mineral," requiring weathering and "extraction" by micro-organisms before it can become a soluble nutrient and be absorbed by crops.

Therefore, in order to make the soil fertile, it is necessary that micro-organism families proliferate, and this requires use of organic fertilizer.

Buy why is it that organic fertilizer cannot nurture soil fertility? The two professors answered by saying that fertilization solely with chemical fertilizer provide micro-organisms with a source of nitrogen enabling them to proliferate greatly. However, for each part of nitrogen micro-organisms use to build their body cells an expenditure of 25 parts of organic carbon is required. If there is insufficient organic fertilizer, they can only break down the organic material in the soil to obtain energy. Consequently, longterm fertilization with chemical fertilizer with no increase in organic fertilizer must inevitably create a decline in the soil's organic matter and impair soil fertility. The rate of yield increase per jin of nitrogenous fertilizer also drops. Experiments have shown that for every 37 jin of ammonium sulfate used, between 2,000 and 2,500 jin of farmyard manure should be added in order to check depletion of the soil's organic materials and humus. Therefore, chemical fertilizer has to be used in combination with organic fertilizer if the soil is to maintain its fertility and the benefits of increased yields from chemical fertilizer increased.

Tow two professors pointed out that to get high yields from low yield areas, organic fertilizer to nurture soil fertility would have to be relied upon; to get consistent yields from high yield areas and to get continued increases in yields, it is even more necessary not to neglect organic fertilization. When yields are high, that shows that the crops have taken many nutrients from the soil, and unless they are promptly replaced, and the organic content of the soil falls, it will not be easily revived. In Zhenjiang where rainfall is great and temperatures high, organic fertilizer decomposes rapidly. In addition, the multiple cropping index is high, so the amount of organic fertilizer applied to the soil has to be somewhat greater.

The two experts also noted that Zhejiang Province enjoys advantages in its workforce and in its farming techniques for large scale use of organic fertilizer. By making use of these advantages to invest in the soil very great benefits can be realized. They suggest that in order to encourage the peasants to use more organic fertilizer, specific policies should be formulated, and that promotion of the use of organic fertilizer should be made a part of the technical responsibility system for farm technicians.

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AUTHOR: JIANG Ying [5592 5391]
ZHANG Jihan [1728 0370 3352]

ORG: JIANG of Beijing University of Agriculture; ZHANG of Research Institute of Animal Husbandry, Chinese Academy of Agricultural Sciences

TITLE: "China's Goat Breeds and Their Productive Properties"

SOURCE: Tianjin ZHONGGUO XUMU ZAZHI [CHINESE JOURNAL OF ANIMAL SCIENCE] in Chinese No 1, 5 Feb 82 pp 9-12

ABSTRACT: The distribution of goats is extensive in China. In more than half of the provinces, the number of goats exceeds that of sheep and in some southern provinces, where raising sheep is not feasible but raising goats is possible. There are only about 8 billion goats in China, however, 61.3 percent in farming areas and 23.5 percent in pastoral areas, with the remaining in mixed areas. With sheep, 60.2 percent are in pastoral areas to prove that goats are distributed mainly in farming areas. Geographically speaking, 41.8 percent of the goats are in the south, 58.2 percent the north; and 28 percent in the coastal areas and 72 percent the inland areas. The major breeds of goats in China, the natural conditions of their areas of distribution, their morphology, size, and weight, their fur, wool, meat, and/or milk producing properties, their reproductive capacities, and the effects of ecological condition on the various goat breeds are summarized.

AUTHOR: PANG Jicai [1690 4764 2088]

ORG: Zhenhai County Bureau of Agriculture and Forestry, Zhejiang Province

TITLE: "Effects of Feeding Porkers With Mixed Feeding Containing Primarily Agricultural By-products"

SOURCE: Tianjin ZHONGGUO XUMU ZAZHI [CHINESE JOURNAL OF ANIMAL SCIENCE] in Chinese No 1, 5 Feb 82 pp 21-22

ABSTRACT: Based upon the feed resources of Zhenhai County, 3 mixed feeds are prepared containing mainly agricultural by-products to study feeding results. From Apr to Sep, 2 of the mixed feeds were compared at the pig farm of Yapu Commune, aside from the experiment carried out in the bureau. The 3 type of mixes contain barley, raw bran, rapeseed residue cake, fish powder, corn, cottonseed residue cake, dry sweet potato, sea shell powder, edible acid, in varied ratios. For comparison, 2 porkers were used for each group. Results indicate that the daily weight gains vary from 461 g to 537.3 g/pig, and an increase of the protein content with a reduction of the fiber content can reduce the feed consumption to raise the rate of utilization of the feed material.

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AUTHOR: YAN Yisui [0917 0110 4840]
LIU Duhui [0491 4648 1979]

ORG: YAN of Shihezi College of Agriculture, Xinjiang; LIU of Guyuan Prefecture Bureau of Meteorology, Ningxia

TITLE: "Structural Model of Oasis Agricultural System in a Desert Region: The Linear Formula of the Structure of Agriculture, Forestry, and Animal Husbandry of Shihezi Reclamation Region, Xinjiang"

SOURCE: Beijing ZHONGGUO NONGKEN [STATE FARMS AND LAND RECLAMATION IN CHINA] in Chinese No 6, 24 Jun 82 pp 15-17

ABSTRACT: Based upon the process of developing the Shihezi Reclamation Region, the authors propose in the paper a concept of oasis agricultural system in a desert region to acknowledge the place and function of forestry and animal husbandry in the special environment from the viewpoint of ecology. On the basis of the historical lessons learned from developing that region and the survey data accumulated there, a model is also established with respect to the linear proportion of agriculture, forestry, and animal husbandry. Several development formulas are analyzed on the computer, using the practice of developing that region as the criterion to evaluate and examine the reasonableness of each formula for determining the final selection of the model system. The objective is to obtain the optimal economic benefit under the premises of maintaining the ecological stability and equilibrium. The Shihezi

[continuation of ZHONGGUO NONGKEN No 6, 1982 pp 15-17]

Reclamation Region was surveyed, designed, and constructed in the 50's, to compose 19 farms (communes) of 5 irrigation districts. The agricultural oasis had a total of 5 million mu of land and 2.95 million of which were cultinated. At present, there are 550 thousand inhabitants and 210 thousand of them work for the State farms. After the system was created from the desert, an oasis was established throughout the 60's to become a reasonable structure and the economic gains were very high. In the 8 years of 1958-1966, 26.7 hundred million jin of grains, 1.76 million jin of cotton were accumulated for the State, amounting to a profit of 1.492 billion yuan. Then, came such unfortunate slogans, during the cultural revolution, as "Good land is not to be used to plant trees." and "Rotating grass with crops is a foreign dogma." etc. and the forest zones and alfalfa meadows of the reclamation region were destroyed. The production dropped severely and quickly. The yield was reduced from 400 jin/mu of the early 60's to about 200 jin/mu in the 70's. In the 60's 4,500-5,000 animals were sustained by each 10 thousand mu of grassland, by the 70's the number of animals was reduced down to 1,500-2,000 heads of sheep per 10 thousand mu. In order to produce more grain to eat, alfalfa meadows were turned over for cultivation. These measures caused the profit situation to change to continuous losses. In the 11 years, the total loss of the State farms amounted to 3.84 hundred million yuan. In 1977, a new formula was adopted to restore the ecological balance of the region. It is estimated that when the optimal formula is completely realized, the current profit of 20 yuan/mu will be raised to 50 yuan/mu. The model formula is discussed.
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CSO: 4011/186

AUTHOR: ZHAO Xiu [6392 0208]

ORG: Deputy Minister, Ministry of Agriculture

TITLE: "Current Mission of China's Agricultural Engineering"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 1, 25 Feb 82 pp 2-4

ABSTRACT: With the approval of the State Council, the Ministry of Agriculture has established the Bureau of Agricultural Engineering and the China Research and Design Academy of Agricultural Engineering, as well as encouraged the establishment of the Agricultural Engineering Society since 1979, to promote the application of modern engineering technology in agriculture. Aside from the principle of achieving economic benefits and developing the field to suit China's own special conditions, the author provides an outline of the following tasks: (1) Breed superior crop varieties; (2) Carry out research on highly effective insecticides and herbicides of low toxicity to protect plants; (3) Change the structure of chemical fertilizer application and practice reasonable application of fertilizer; (4) Provide rural villages with needed fuels and resolve the contradiction between fuel, feed, and fertilizer by comprehensive utilization; (5) Design for the needs of househood auxiliary industries; (6) Work for the engineering of farm by-products processing; (7) Develop natural resources survey of rural villages. This paper is written on the basis of a speech delivered by the author at the Expanded Conference of Board of Directors of the Chinese Agricultural Engineering Society.

AUTHOR: XU Guanren [1776 0385 0088]

ORG: Member of Standing Committee of Chinese Agricultural Engineering Society; Director, Research Institute of Atomic Energy Utilization, Chinese Academy of Agricultural Sciences

TITLE: "Experts on China's Future Agricultural Construction Work: Unlimited Promise of Agricultural Engineering"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 1, 25 Feb 82 pp 5-6

ABSTRACT: The author defines agricultural engineering as a polytechnical and comprehensive engineering, spanning across many specialties to utilize newly emerged techniques of various types of engineering to develop, utilize, and protect natural resources so as to raise agricultural productivity, improve the rural environment, and shorten the distance between the workers and the farmers and between the cities and the countryside. The paper explains in some detail the above definition of the field. A limitless and bright future is predicted for this new field.

AUTHOR: TAO Dinglai [7118 7844 0171]

ORG: Deputy Chairman of Standing Committee, Chinese Agricultural Engineering Society and Director, China Research and Design Academy of Agricultural Engineering

TITLE: "Experts on China's Future Agricultural Construction Work: Make Many Contributions To Develop Agricultural Engineering"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 1, 25 Feb 82 pp 6-7

ABSTRACT: Centering upon the government's report delivered by Premier ZHAO Ziyang at the Fifth Plenum of the Fourth People's Congress, the author sets forth in the paper the tasks of agricultural engineering for the purpose of freeing China gradually from the self-supplying and self-sufficient type of agricultural production of the past to develop gradually toward a future merchandise-producing agriculture. The existing cultivated land, and the vast mountains, hills, grassland, lakes and coastal seas must all be reasonably and fully utilized. Just as Premier ZHAO said, land utilization engineering, agricultural energy source engineering, agricultural environment engineering, agricultural construction engineering, food and food processing engineering, etc. are all parts of agricultural engineering. Efforts must, therefore, be exerted to contribute to its development and it must not be allowed to fail our expectations.

AUTHOR: YU Youtai [0151 0645 3141]

ORG: Deputy Chairman of the Board of Directors, Chinese Agricultural Engineering Society and President of Northeast College of Agriculture

TITLE: "Experts on China's Future Agricultural Construction Work: Extend Agricultural Engineering Technology to Accelerate the Development of Agriculture"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 1, 25 Feb 82 pp 7-8

ABSTRACT: Since the 11th Plenum of the Third Congress of the party, agriculture in China has gradually and steadily been developed into a new era, but in order to develop agricultural production still further to bring about a prosperous rural economy, it is necessary to apply extensively scientific technologies to the following 3 aspects: (1) Developing the potential productivity of plants and animals with technologies of bio-sciences; (2) Improving and creating environmental conditions favorable for the growth and development of animals and plants and techniques of processing and storing agricultural by-products; (3) Business management of agricultural production to raise the economic benefits. Ways with which efforts are to be made at present toward the above goals are discussed in some detail.

AUTHOR: ZENG Dechao [2582 1795 6389]

ORG: Deputy Chairman of the Board of Directors, Chinese Agricultural Engineering Society and Vice President of Beijing College of Agricultural Mechanization

TITLE: "Experts on China's Future Agricultural Construction Work: Welcome the Coming of a New Year and March Forward in a Firm Stride"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 1, 25 Feb 82 pp 8-9

ABSTRACT: The work of the Agricultural Engineering Society in the past year is generally summarized to be organizing some scientific discussion meetings, starting some courses of study and some training classes, launching projects of popularizing sciences and technologies, publishing some journals, and compiled some books. In the new year, the Expanded Conference of Board of Directors has suggested the development of a program of answering technical inquiries, introducing techniques of processing, transporting, and maintaining the freshness of farm products, gradual standardization of the terminology and work procedures of agricultural engineering, and establishing some specialty committees and strengthening international scientific exchanges, etc. Finally, due to the traditional separation of departments and professions, some weak links and blanks still exist in the field and this shortcoming is especially reflected in the arrangement of specialties in schools of higher and intermediate education. This is a problem requiring an urgent resolution.

AUTHOR: ZHANG Jigao [1728 1323 7559]

ORG: Deputy Chairman of Board of Directors, Chinese Agricultural Engineering Society and Vice President of China Academy of Agricultural Engineering Research and Design

TITLE: "Experts on China's Future Agricultural Construction Work: Make It a Good Society [Scientific Association] to Develop The Field"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 1, 25 Feb 82 pp 9-10

ABSTRACT: The field of agricultural engineering being developed in China is not yet a familiar subject to all. It still sounds like a newfangled thing. In reality, it has contributed to agricultural production for a long time and has a long and honorable history. It may be said that agriculture and agricultural engineering are inseparable friends. For example, the irrigation structure in Dujiang of Sichuan was built 2500 years ago and remains a world famous large scale agricultural engineering. The author goes on to say that as a new scientific field, agricultural engineering had its start in 1907 when the society was established in the USA and a department was established in the University of Iowa as well as the University of Nebraska. Although the Chinese Agricultural Engineering Society was established as late as 1979, it now has more than 500 members and branch societies have sprung up in 29 provinces, cities, and autonomous regions. The author urges all members to unite to develop and promote the field.

AUTHOR: HU Qinling [5170 2953 1545]

ORG: Deputy Director, Bureau of Seeds, Ministry of Agriculture

TITLE: "Current Condition and Future Development of Seed Processing Engineering in China"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 1, 25 Feb 82 pp 11-13

ABSTRACT: Machine processing and sorting of seeds, including threshing, drying, and cleaning, is a new task. After the goal of seed processing mechanization was brought up at the National Seed Work Conference in 1975, obvious accomplishments have been obtained in these short years, considering the fact that it started out from nothing. In 1976-77, some sample machines were introduced from E.Germany and Switzerland and manpower was organized to draw, imitate, and manufacture. In 1978, the machines began to be extended. Today, the country has more than 5000 seed sorting machines of all types, 770 high freqency seed treatment machines, 850 low frequency current treatment instruments, 260 seed drying machines, and more than 1400 drying rooms, drying chambers, and drying pits. At present, all counties of 29 provinces, cities, and autonomous regions have machine seed sorting capability. The quantity of seeds that are machine processed has increased from the 2 hundred million jin of 1978 to 12 hundred million jin in 1980, to exclude fromjust wheat, rice, and corn to include Gaoliang, millet, beans, flax, and green manure. Obvious economic benefits have also been obtained; due to the improved quality of seeds, less seeds are used for planting. The 10-15 percent broken seeds after sorting are used mostly as food with some as feed. These seeds would not germinate and would have been wasted if they are used for planting. The yield increase is estimated at 5-10 percent. Of course, the seed selecting labor is also considerably lessened.

AUTHOR: CHEN Kunquan [7115 2492 2164]

ORG: Jiangxi Province Center of Science and Technology Information

TITLE: "Investigation of Several Problems in Rural Energy Source Research"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 1, 25 Feb 82 pp 18-20

ABSTRACT: Most recently, the author participated in the work of compiling and writing the book, RURAL USES OF ENERGY and the work of rural energy survey and encountered several real problems as follows: (1) The number of firewood-deficient households commonly figured to be 8 billion, amounting to 47.7 percent of farming households. This is not in fact a realistic figure because many of these households may be short of firewood a few months in a year only, as the concept of firewood includes dry stubble, wood shaving, husk, etc. Certain indices are proposed to arrive at a realistic figure of shortage for every prefecture, county, commune, or brigade. (2) The effective heat value needed for daily living of a farm househood varies from place to place. It is suggested by ZHANG Zhengmin [1728 2973 2404] of Research Institute of Energy Sources Chinese Academy of Sciences that to maintain a minimum standard of

[continuation of NONGYE GONGCHENG No 1, 1982 pp 18-20]

living, 424 kg of coal is needed per farmer per year. This figure may be converted into an effective heat energy of 5000 kcal. The author's survey indicates that in Rugao County of Jiangsu Province, for example, the actual needs are estimated at 3500-3800 kcal. (3) Standard heat value of farm "firewood" also varies a great deal. For example, the heat value of stubble is thought to be 3400 kcal but related department in Zhejiang Province claims that the local stubble is valued at 2000 kcal, while the average heat value of coal in Jiangxi Province is valued only at 3700. It is important to set realistic equivalent values for all different types of fuels and "firewood" so that in the North and the South everyone can speak the same language. Finally, the paper also deals briefly with problems of estimated production of firewood-producing forests, small hydroelectric power stations, small coal mines, and other related problems of operation, management, ownership, etc.

AUTHOR: HUANG Xunfang [7806 6064 5364]

ORG: None

TITLE: "On the Effects of Energy Utilization For Agricultural Production in Xinjiang"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 1, 25 Feb 82 pp 20-23, 10

ABSTRACT: The sources of energy for agricultural production in Xinjiang is currently composed of chemical fertilizer, oils, electric power, agricultural machines, seeds, manpower, and animal power. In 1979, 546.698 thousand tons of chemical fertilizer were applied, the production of which consumed 381.916 thousand tons of standard coal. The total oil materials used at the farms was 274 thousand tons, about 70 percent of which was for agricultural production, the equivalent of 261.8 thousand tons of standard coal. For farming machinery, including tractors, implements, trucks, irrigation and drainage equipment, etc. about 198.8 tons were used. Estimated at an energy consumption of 7 tons of standard coal to manufacture 1 ton of farm machinery, the consumption may be converted into 139.1 thousand tons of standard coal, assuming the useful life of the machinery being 10 years. The electrical power used was 37.569 billion kwh which may be converted to 95.623 thousand tons of standard coal. The manpower used for agricultural production is 2.95 million man-days. The energy contributed by these workers may be converted to 63.72 thousand tons of standard coal. There were 972,400 draft animals working for agricultural production and the estimated

[continuation of NONGYE GONGCHENG No 1, 1982 pp 20-23, 10]

total energy contribution may be converted to 60.796 thousand tons of standard coal. For agricultural production, 35.086 billion kg of seeds were used. Considering the energy needed to produce 1 kg of seeds to be 0.2 kg of standard coal, the energy consumed for the seeds is the equivalent of 70.17 thousand tons of coal. The author concludes, based upon the data thus furnished, the major problems may be said to be low utilization rate, improper application, and a disproportionate ratio, as far as the energy consumption for agricultural production in Xinjiang is concerned. First, too much energy is consumed through chemical fertilizer application, amounting to 36 percent of total. Soils of Xinjiang have a low active phosphorus content; therefore, the ratio of nitrogen and phosphorus should be 2 : 1, instead of the present 4 : 1. In terms of ecology and environmental and soil protection, the long term goal should be organic farming. There is a very great potential in the possibility of reducing the consumption of petroleum fuels in Xinjiang. The paper also offers varieties of ways to reduce the quantity of seeds used for planting and to increase labor productivity. In terms of productivity, the energy consumption of draft animals through the consumption of feed is 4 times higher than a farm machine. The author is in favor of using the feed to raise animals as meat and developing machines to take the place of draft animals.

AUTHOR: YANG Juntian [2799 0193 3944]
YUAN Borui [5913 2672 3843]

ORG: None

TITLE: "Lectures on System Engineering in Agriculture: I. General Discussion of System Engineering in Agriculture"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 1, 25 Feb 82 pp 32-37

ABSTRACT: In the early 19th century, with the discoveries of energy conversion, cells, and the theory of evolution, mankind began to notice that nature is a unified entity of events and processes that are interrelated, interdependent, interacting, and mutually limiting. This idea of unified entity is an idea of "system." System engineering is different from mechanical engineering in so far as it also involves completion, organization, planning, arrangement, etc. to provide decisions, formulas, and procedures for the purpose of realizing the optimal design, the optimal control, and the optimal management. System engineering of agricultural production; therefore, does not limit to breeding a given superior crop, producing a certain insecticide, a machine, or chemical fertilizer. It concerns the research, orgnization, and arrangement of planting, manpower, animal power, implements, fertilizer, capital, etc. for the purpose of obtaining the highest total yield and the optimal economic benefit most reasonably and effectively. This definition of system engineering in agriculture is detailed.

AUTHOR: LIU Zhongyi [0491 0022 0001]
LIU CHUANYAO [0491 0278 1031]

ORG: Both of Research Institute of Economics, National Planning Committee

TITLE: "Discussions Concerning the Prospect of Agricultural Development in China"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 2, 25 Apr 82 pp 2-5

ABSTRACT: Before discussing the prospect of agricultural development in China, it is necessary to assess correctly the natural conditions of China and the current conditions of agriculture. The size of land and surface water, the number of species of seed plants, the number of species of land vertebrates, the number of species of marine and freshwater fish, the total yield of major agricultural crops, and the cultivated field, forest land, and grassland per capita are reviewed as well as China's geographic location, climate, uneven distribution of basic resources, acreage subject to frequent flood and drought damages, and the size of land occupied by cities, transportation, and industry and wasteland yet to be reclaimed. The paper concludes that the natural conditions of China dictate that the direction of future development should be multiple and comprehensive operation of farming, forestry, animal husbandry, auxiliary industry, and fishery and China's agriculture must not be limited to cropping. On the basis of the experience of the past 3 decades, the paper discusses, in general terms, the relationship between industrialization and agricultural development, difficulties and strategies of agricultural development, and the key motive power, i.e. the economic benefit for the farmers, necessary for agricultural development.

AUTHOR: LIU Jinxi [0491 0093 2522]
YANG Yacheng [2799 0068 2052]

ORG: None

TITLE: "On the Important Function of Construction Engineering in Agricultural Production"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 2, 25 Apr 82 pp 6-7, 26

ABSTRACT: Agricultural modernization means instead of depending entirely upon nature, exerting efforts to create an environment, i.e. to change the natural condition to being favorable for fast and satisfactory growth of animals and plants on the limited land and other resources. It is, therefore, necessary, to emphasize constructive engineering to raise the agricultural productivity to include the development of greenhouse culture, industrialized poultry and animal hunsbandry, feed processing, seed processing, and food processing, to build various warehouses to store and keep fresh various agricultural products, and to design and construct comprehensive engineering structures for the regeneration of energy sources. If these items of construction engineering are not included in today's development agenda, the future of agriculture will be greatly affected. The paper proceeds to detail the items of construction for agricultural development.

AUTHOR: WANG Yaolin [3769 5069 2651]

ORG: None

TITLE: "Introduction and Development Condition of Plastic Film Ground Cover Cultivation Technique in China"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 2, 25 Apr 82 pp 8-9

ABSTRACT: Traditionally, straw, horse manure, weed stubble, sand, and stone were used in China as a ground cover to protect moisture, fertility, and temperature. In the middle of the 20th century, with the development of high molecular compounds, the technique of using polyvinyl film was created. Japan was the first to carry out research on the subject, followed by many other countries to reap various degrees of benefits. In the winter of 1978, the technique was introduced to China from Japan. The Bureau of Science and Technology of the Ministry of Agriculture organised some units in various provinces, cities, and autonomous regions of the country in 1979 to experiment with the technique in 660 vegetable fields and obvious benefits of yield increase and early ripening were obtained. In 1980, the experimental acreage was quickly expanded to 25,000 mu of vegetables, peanuts, cotton, rice, melons, and fruits. In 1981, the acreage was developed to 220,000 mu and the technique was experimented with more than 70 crops. At present, the value of the technique has been affirmed for more than 30 types of crops. The application of the thin plastic film ground cover technique in various parts of China is briefly discussed.

AUTHOR: WANG Shishang [3076 1102 1424]

ORG: None

TITLE: "Tube-supported Single Beam Plastic Tent for Agricultural Use: PGP5-1"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 2,25 Apr 82 pp 24-25

ABSTRACT: On the basis of some tube-supported plastic tents introduced from Japan in 1979-80, the Shijiazhuang Institute of Agricultural Modernization Chinese Academy of Sciences proceeded to carry out comprehensive research on their structure, properties, and experiments of their use in crop culture. In 1981, the PGP5-1 was designed and the single beam prototype plastic tent suitable for the conditions of China was manufactured by Shijiazhuang Construction Machinery Plant. At present, it is being produced in small batches for the use of various regions of the country. The structure, properties, and characteristics of the plastic tent, its range of application,and beneficial effects are briefly reported.

AUTHOR: WU Chengzhong [0702 6134 1813]

ORG: Jiangsu Provincial Science Committee

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 2,25 Apr 82 pp 27-30

ABSTRACT: On the one hand there is a serious energy shortage problem in Jiangsu and on the other hand there is still a great deal of waste of energy. A survey, reported in the paper, reveals the number of households of a typical commune to be 999 in 1965 and 985 in 1980, the income to be 129.01 per capita in 1965 and 228.65 in 1980.The energy consumption in 1980 is calculated to be the equivalent of 855.4 kg of standard coal per year per household of 5 persons on the average for daily living. Due to the inefficient old fashioned stoves, the waste is about 10-15 percent. Energy consumption directly and indirectly for agricultural production is the equivalent of 3.98 million tons of standard coal, with an average increase of 16.11 percent while the increase of the value of agricultural products has only been 8.69 percent per year. The energy resources are calculated at the equivalent of 18 million tons of standard coal per year, of which bio-material energy amounts to 98 percent. Due to the high population density of the province, compared with other provinces of the country, the energy resource is only the equivalent of 360 kg of standard coal, much lower than the 600 kg per capita nationwide. The rural villagesof the province still have resources of solar, wind, and peat energy awaiting reasonable development, however. In that sense, energy self-sufficiency remains a possibility in the province. Ways of resolving the energy shortage problem are suggested.

AUTHOR: WANG Wenlong [3769 2429 7127]
YUAN Borui [5913 2672 3843]

ORG: None

TITLE: "Lectures on System Engineering in Agriculture: II. System Analysis and System Models in Agriculture"

SOURCE: Beijing NONGYE GONGCHENG [AGRICULTURAL ENGINEERING] in Chinese No 2,25 Apr 82 pp 40-44, 39

ABSTRACT: Analysis of an agricultural system may provide the scientific basis for establishing a new system more suitable for the agricultural ecology and economic needs. Two examples are given: (1) The Lianyuan Prefecture Institute of Agricultural Sciences analysed the yield, ecological property, transplanting density, fertilizer application level, etc. of hybrid early rice in 36 farming areas to produce polynominal regression equations (a mathematical model) to compute the target function of the various desirable properties. Using a computer, 86 formulas were chosen from 1028 suggested formulas before analyzing other experimental data to produce, finally, 2 high yield formulas, which have now been applied successfully in production. (2) A mountain production team of Beijing was used as the target to analyze types of energy resources and conditions of conversion utilization. The

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energy needs were duly surveyed and analyzed to produce an energy flow chart and a linear planning model. With the highest net gain as the target of the system, an optimal formula of solar energy comprehensive utilization plan was designed to make it possible for the capital investment to be recovered in 4 years. Applications of system analysis and mathematical models in the decision-making process of agricultural production are briefly introduced.

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CSO: 4011/177

## Experimentation Research

AUTHOR: YANG Shicheng [2799 0013 6134]

ORG: Yunnan Provincial Academy of Agricultural Sciences

TITLE: "Investigation of the Oversummer Principle of Wheat Stripe Rust Pathogen in Yunnan Province"

SOURCE: Kunming YUNNAN NONGYE KEJI [YUNNAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2, 25 Mar 82 pp 1-7, 22

ABSTRACT: Wheat stripe rust is a major disease in central, western, and northwestern parts of Yunnan. In a mild year, about 1 million mu are involved, amounting to 13 percent of the wheat acreage. In a severe year, such as 1981, 40 percent of the acreage, i.e. 2.7 million mu of wheat were affected to result in a yield reduction of 150 million jin. In the summer of 1979, the Plant Protection Institute of the academy carried out an investigation of the oversummer condition of the stripe rust pathogen in such severely affected areas as Anning, Lijiang, etc, and stripe rust disease was discovered on self-sown wheat and summer wheat and the same was observed during a follow-up investigation in 1980 to prove that wheat stripe rust pathogen can oversummer in Yunnan in such cool areas as Zhongshan, Gaoba, etc. In 1981, a team was organized by the institute and the Yunnan University of Agriculture to carry out an extensive survey through Kunming, Yuqi, Dali, Lijiang, Baoshan, Chuxiong, Qunjing, etc. totaling 18 communes in 7 counties to determine the areas of oversummering pathogens. Results of the 3 year study, 1979-81, are reported.

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AUTHOR: LI Qiongzhi [2621 8825 5347]
LI Wenzhang [2621 2429 4545]

ORG: Both of Institute of Agricultural Sciences, Dali Bai Nationality Autonomous Prefecture

TITLE: "Epidemiological Reasons of Wheat Stripe Rust in Dali Prefecture and Ways of Its Prevention and Control"

SOURCE: Kunming YUNNAN NONGYE KEJI [YUNNAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2, 25 Mar 82 pp 8-15

ABSTRACT: Dali Prefecture is located between $24^{\circ}40'$ and $26^{\circ}47'$ N. Lat. and is warm in the winter and cool in the summer, with plentiful rainfall. It is a wheat high yield region as well as a region of frequent summer wheat stripe rust incidences. Since the 60's, there have been 5 severe epidemics in 1963, 73, 79, 80, and 81 with ever enlarging areas of involvement, from 233.3 thousand mu in 1979 to more than 800 thousand mu in 1981. Analyses reveal that the 3 factors of wheat breed, pathogen, and environmental condition contrubute to the severe epidemics. Since 1979, the species composition of the pathogens have changed and highly toxic species have become dominant. The mountainous and semi-mountainous areas of 2000-23000 m in elevation are favorable for large quantities of oversummering pathogens, taking the form of summer spores to reproduce and infect continuously. Preventive measures of reasonable arrangement of breeds and cultivation techniques are extensively discussed.

AUTHOR: ZHOU Chengqing [0719 2052 3237]

ORG: Wenshan Prefecture Institute of Agricultural Sciences

TITLE: "Experimental Use of Perforated Plastic Film to Cultivate Rice Seedlings"

SOURCE: Kunming YUNNAN NONGYE KEJI [YUNNAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2, 25 Mar 82 pp 19-22

ABSTRACT: Although using plastic film to cultivate rice seedlings has the advantages of producing stronger seedlings and reducing the number of rotton seedlings there are also shortcomings of having too high a temperature on clear days, and tender seedlings of weak resistance due to moisture saturation under the plastic cover. In May 81, the author and colleagues experimented with growing rice seedlings in a tent made of plastic film with prepunched holes. Plastic films in dark blue, light blue, and white were used with an open-air seedbed as the first control and dark blue plastic film without holes as the second control. The holes are punched in size of about 1 cun in diameter and 1 x 1 chi in distance. After seeding on 26 May, the films are used to make tent covers immediately. Results indicate that seedlings grow best under the dark blue perforated plastic film cover. The quality of the seedlings, the growth and development period of the seedlings, the different temperature conditions under the different covers, the yield structure factors of the seedlings, etc. are among the observed data reported in the paper.

AUTHOR: WANG Changzheng [3769 2490 2398]
DONG Zhongsheng [5576 0112 3237]

ORG: Both of Dali County Bureau of Agriculture

TITLE: "Brief Introduction of a High Yield Breed of Rice, Dianyu No 1"

SOURCE: Kunming YUNNAN NONGYE KEJI [YUNNAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2, 25 Mar 82 pp 23-25

ABSTRACT: Dianyu No 1 is a hybrid rice introduced from the Yunnan Provincial Rice Cooperative Group in 1974 by LI Weicai [2621 3634 2088] a technician of the Dali County Agricultural Technology Station. The hybrid material was propagated in Zhoucheng for selective breeding to become the high yield,medium maturing, short stalk, numerous spike type intermediate Keng variety. Since 1977, it has been tested, demonstrated, and extended for 6 years. Its yield has been high and stable in warm or cold years, in sandy or clay soils, and in all areas of 1970 to 2080 m in elevation. In 1979, 500 mu were extended in the county and the yield was 1,368 jin/mu. In 1980, 2160 mu were cultivated and the yield was 1429.466 jin/mu. In 1981, 5261 mu were planted and the yield was 1457.4 jin/mu. Dianyu No 1 is beardless. The stalk is 80-90 cm in height. The spike is 15-16 cm in length, with 90-100 grains per spike. The fruiting rate is about 90 percent. The grain is short and round, weighing 23-24 g/1000 grains. The husking rate is 78 percent. The rice is white and slightly transparent, and very tasty. The key cultivation techniques are described.

AUTHOR: CUI Maokun [1508 5399 0981]

ORG: Quqing Prefecture Bureau of Agriculture

TITLE: "Varied Techniques to Take Advantage of Superior Conditions for the Yield Increase of Maize"

SOURCE: Kunming YUNNAN NONGYE KEJI [YUNNAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2, 25 Mar 82 pp 33-35, 41

ABSTRACT: From the late 50's to the early 60's (1957-64) due to the influence of leftist ideas, practice became separated from reality and there was the mistaken attempt of changing coarse grain to fine grain, i.e. converting uplan fields to paddies. The maize acreage was continuously constricted and the unit yield stayed the same. The natural conditions of Quqing, i.e. the elevation, the weather, and the soil fertility, are suitable for the growth of corn and the condition of water is less than favorable for paddy rice, however. Since then, the maize acreage has been increased yearly. In 1980, it was 2.394 million mu to produce a total yield of 126 hundred million jin. In 1981, the months of Jun and Jul were cool and rainy and the Sep was dry but the total corn yield was still 102 hundred million jin. For the production of corn, the prefecture is divided into 3 regions: the high yield region of a unit yield of above 800 jin/mu, the medium yield region of a unit yield of 500-800 jin/mu, and the low yield region of a unit yield of less than 500 jin. The breeds, the cultivation technique, the fertilizer application, etc. are all designed differently to meet the requirements of the 3 different regions. Furthermore, green manure is regularly cultivated and the accumulation of farm manure encouraged. Chemical fertilizer is applied reasonably, with emphasis on phosphate fertilizer. These and other measures adopted in the prefecture to bring about successful yield increase of corn in recent years are introduced.

AUTHOR: HE Shunchang [0149 7311 7022]

ORG: Yunnan University of Agriculture

TITLE: "Important Measures to Increase the Unit Yield of Sugar Cane in Yunnan"

SOURCE: Kunming YUNNAN NONGYE KEJI [YUNNAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 2, 25 Mar 82 pp 36-41

ABSTRACT: Since the liberation, the sugar cane acreage has been expanded from 107 thousand mu to 633 thousand mu in the province and the total cane production from 275 thousand tons to 1,844 thousand tons. The increase in the unit yield is very negligible, however. It is only from 2.52 tons to 2.70 tons/mu, while the average for the world is 3.58 ton/mu with the highest at 11.25 tons/mu. Following an analysis of the 4 factors of the yield structure: the number of effective stems, the height of the stalk, the diameter of the stem, and the weight of the stem, the paper concludes that the chief reason for the low yield condition in Yunnan is the fact that the stalk is not sufficiently high. The following mesures are suggested to overcome the problem: (1) Cultivate some autumn sugar cane in suitable areas; (2) Extend the technique of cultivating seedlings for transplanting; (3) Manage perennial roots well; (4) Carry out an 8-item regimen of cultivation technique faithfully.

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CSO: 4011/174

AUTHOR: HOU Xueyu [0230 1331 3558]

ORG: Researcher, Research Institute of Botany, and Committee Member of Biology Department of Chinese Academy of Sciences

TITLE: "Water Conservancy Engineering Must be Combined With Afforestation of the Source of Water"

SOURCE: Beijing ZHONGGUO LINYE [FORESTRY IN CHINA] in Chinese No 6, 5 Jun 82 pp 4-5

ABSTRACT: Although the rainfall of Hainan Island is very rich its distribution is not even, with 80-90 percent of it concentrating in the period from May to Oct. From Nov to Apr, the dry season lasts 4 to 6 months, with only about 10-20 percent of the precipitation of the year. During the dry season, the high temperature and intense sunlight cannot be used to serve agriculture. Drought disasters, especially in the spring, are frequent occurrence in Hainan Island and such engineering measures as the construction of reservoirs are,therefore, necessary. To a certain extent, the water conservancy structures have benefited the people of the island. For example, there were only 12 thousand mu of rice paddies in Changjiang County in the beginning of the liberation when there was no such construction. The farmers there lived on sweet potatoes. Now that the water conservancy structures have been constructed, the area of paddies has been enlarged to 90 thousand mu; beyond the rice production, the problem of drinking water for the 150 thousand inhabitants is resolved as well. The situation of Dongfang County is similar. Judging from the

[continuation of ZHONGGUO LINYE No 6, 1982 pp 4-5]

concrete condition, the Qicha Commune, for example, was surrounded by lushly forested mountains in the beginning of the liberation. The rainfall was plentiful and the local Li and Miao nationalities fully utilized this superior condition to construct reservoirs and channels to build paddies. Every year, 1.60 million jin of grains have been contributed to the State by this commune. Since 1957, as the virgin forests at the sources of water were continuously logged, the streams gradually dried out. In 1980, the wells of the 15 villages of that commune were dry and the 5,000 inhabitants had no drinking water to cause this rich commune to live off loans and relief money, and the 200 kw hydroelectric power station to stop generating power. The author cautions that whenever water conservancy structures, such as reservoirs, are constructed, forests on the slopes within 500 m of the reservoirs should be protected and logging should be absolutely forbidden. Forests beyond the 500 m limit can only be selectively logged. Forests that have already been destroyed should be quickly restored through active afforestation, if the water conservancy structures are to continue to serve agricultural production.

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CSO: 4011/179

## Meteorology

AUTHOR: SUN Sufang [1327 4790 5364]

ORG: None

TITLE: "Weather and Climate in China, 1981"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 4, 10 Apr 82 pp12-13

ABSTRACT: In 1981, the rainfall in China was unevenly distributed. Compared with a normal year, the rainfall was distributed more to the west than to the east and damages from drought and flood were rather severe in some provinces. In most areas of China, the spring was warmer than usual in 1981 and the autumn colder. In the summer, the weather was very hot in parts of the country while cold temperature damages appeared in Heilongjiang. Following the above general descriptions of the weather in China in 1981, the paper provides some details under the following headings: (1) The rain was especially frequent in the western and the norther part of the Northeast of China during the summer to result in very severe flood damages in Sichuan basin, the southern part of Shaanxi, and the eastern part of Heilongjiang. (2) The spring rain was weaker than usual in the middle and lower reaches of Changjiang; the hot summer months were not as noticeable; and seemly endless rain occurred in the autumn. (3) Spring drought was rather severe in the North and scarcely any rain in the autumn. (4) Very hot weather appeared in North China, south of the Changjiang, and South China for short periods in the summer. (5)Low temerature appeared in Heilongjiang and in most regions of the country, sustained lower than usual temperature appeared. (6) There were frequent hails in the spring and the typhoons landed during concentrated periods and the end of typhoons came later than usual.

AUTHOR: WANG Duo[3076 6993]
HUANG Yiliu [7806 2034 3812]
ZHANG Tan [1728 6223]

ORG: None

TITLE: "Yield Forecasting With Circulation Factors"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 4,10 Apr 82 pp18-19

ABSTRACT: Steyaert, L. T. 's paper "Atmospheric Pressure and Wheat Yield Modeling " in AGRICULTURAL METEOROLOGY (No 19, 1978) is cited to show the growing interest in the studies on the relationship between weather and atmospheric circulation and the yield of grains in typical grain producing regions, in recent years. The rich Taihu plain of China is a typical grain-producing region and an analysis and comparison of the weather and circulation patterns of years of bountiful and poor harvests of that region should be a worthwhile project. A formula was decided upon to define a bountiful year, using the sum of unit yields of the 3 crops of wheat, rice, and rice of that region as the index and the weather patterns and circulation characteristics of those years were compared with the other years. The years of 1953, 55, 58, 65, 66, 67, 72, 78, and 79 are bountiful years; 1950, 54, 57, 60, 61, 75, and 77 are poor years; the remaining years are ordinary years. With the data of the

[continuation of QIXIANG No 4, 1982 pp 18-19]

years of 1954-1973 as the basis, forecast equations were formulated to be used to forecast the years from 1974 to 1979 to verify the accuracy of the equations. Calculation with the equations indicates the years 1978, 79, and 81 to be bountiful, the years 1975. 77, and 80 to be poor, and the years 1974, and 76 to be ordinary. This finding confirms with the facts exactly.

AUTHOR: PANG Peiqi [1690 1014 7496]

ORG: Jiangyin County Weather Station, Jiangsu Province

TITLE: "A Method of Short-rang Precipitation Forecasting Based on Weather Periodicity"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 4,10 Apr 82 pp24-25

ABSTRACT: Using the periodic weather chart produced by the Jiangsu Provincial Research Institute of Meteorology as the basis, the paper reports an analysis with the DJS-6 computer to create a method of short-term precipitation forecasting. The method was put to use throughout the year 1981. In terms of forecasting clear or rainy days during the months of Jun and Jul, the accuracy rate was 90 percent; in terms of forecasting the grade of rainfall (classifying rain into heavy, storm, and heavy storm) the accuracy rate was 68.6 percent. The computation equation, the selection of forecasting factors, and the method of day to day precipitation forecasting using the technique of fuzzy mathematics are explained.

AUTHOR: HUANG Yan [7806 3508]
CHEN Tongliang [7115 2717 5328]
XUE Fuliang [5641 4395 5328]

ORG: All of Shanghai Municipal Bureau of Meteorology

TITLE: "Radar Observations of Typhoon 8114"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 4, 10 Apr 82 pp 29-30

ABSTRACT: After typhoon No 14 of 1981 was formed in the afternoon of 27 Aug in the Pacific Ocean to the northwest of Guam, it moved steadily at a speed of 20 km/hour in the northwestern direction to reach the sea about 250 km to the southeast of Shanghai at the 02 hour on 1 Sep before gradually changing its direction. During the period of direction change, its speed is obviously reduced. Phenomena of stoppage and turn appeared in the morning of 1 Sep at a distance of about 200 km from Shanghai to cause a prolonged windstorm and high tidal waves to attack Shanghai. The authors used the 713 Radar equipment made in China to carry out some systematic studies of this typhoon. Many echo photos of 5-10-minute intervals were taken during the period of direction turning of the typhoon. Based upon these data, the hurricane zone of the typhoon and its principle of change, the echo structure in the vicinity of the eye, the whirling and deformation phenomena of the eye, and the indicative action of the echo phenomena with respect to the movement and the change of intensity of the typhoon are discussed. Finally, data of synchronized observations with a 5cm 713-Radar and a 10 cm 843-Radar are used for some comparative analyses.

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CSO: 4011/189

AUTHOR: YIN Hongzhang [3009 1347 4545]

ORG: Shanghai Research Institute of Plant Physiology, Chinese Academy of Sciences

TITLE: "Trends and Objectives of Plant Physiology"

SOURCE: Shanghai ZHIWU SHENGLIXUE TONGXUN [PLANT PHYSIOLOGY COMMUNICATIONS] in Chinese No 1, 20 Feb 82 pp 1-3

ABSTRACT: The relationship between plant physiology and agriculture and the problem of how plant physiology can serve agriculture were passionately discussed in the 60's. During the period of domination of the gang of four, the function of plant physiology in agriculture was repudiated and many plant physiology teaching and research offices were abolished and the researchers dismissed. This was a part and parcel of the gang's attack against science and culture, but the confusion thus created in terms of the field of plant physiology has not been completely dispelled to this day. The author, the Director of the Shanghai Research Institute of Plant Physiology, suggested that the subject of how plant physiology is to serve the 4 modernizations should be made a special subject of discussion in this issue of the journal, and wrote this paper to lead the discussion. In the paper, the author explains that among the many problems dealt with in plant physiology, which is a basic science, the 2 major problems are: the special structure and function of plants that are different from other organisms and how plant physiology is to serve agricultural production. In the long run, these should not be the only problems. For example, many books have been published to discuss ecological physiology, such as the Man and the Biosphere subject proposed by the United Nations organization. The most serious problem is pollution created by industrial waste water and gas, which is a part of the problem of environmental protection. The proposal of M. Calvin to use special plants to produce hydrocarbon fuel to resolve the problem of energy shortage is also briefly mentioned.

AUTHOR: ZHOU Jiahuai [0719 0857 2849]

ORG: Department of Biology, Anhui Teachers University

TITLE: "To Serve Agriculture is an Important Task of Plant Physiology"

SOURCE: Shanghai ZHIWU SHENGLIXUE TONGXUN [PLANT PHYSIOLOGY COMMUNICATIONS] in Chinese No 1, 20 Feb 82 pp 3-4

ABSTRACT: Citing the paper of YIN Hongzhang titled "General Condition of Plant Physiology in the USA--Report of a Visit" in which those who engage in teaching, research, and extension in the universities of the USA are described as so closely coordinated that the results of research are quickly experimented in farms and applied in practice, while problems of production serve as a feedback to promote plant physiology research, the author attempts to explain in the paper that such phenomena of production as cotton boll shedding, high yield physiology of rice and wheat, moisture physiology, respiration metabolism, material transfer, plant hormone, etc. are key subjects of research of plant physiology that have direct relationship with crop production. At present, the mystery of life should be investigated on the molecular level to produce some results, but on the other hand results of research in physiology should also be continuously expanded and applied in agricultural production. Perhaps, a field of applied plant physiology should be established to emphasize that portion of plant physiological research which is to serve agricultural production.

AUTHOR: YUAN Shichou [5913 1102 3985]

ORG: Beijing Municipal Academy of Agricultural Sciences

TITLE: "Comments on the Development of Plant Physiology in China"

SOURCE: Shanghai ZHIWU SHENGLIXUE TONGXUN [PLANT PHYSIOLOGY COMMUNICATIONS] in Chinese No 1, 20 Feb 82 pp 5-7

ABSTRACT: In recent years, many classical basic biological sciences, such as morphology, physiology, and toxology have not received much attention and it has even become difficult to carry out teaching and research work in these fields. The survival of these sciences has begun to be feared by many. The author claims in the paper that the future of plant physiology is really bright because it is the theoretical foundation of mankind's control of individual and colonies of plants. Undoubtedly, plant physiology will proceed deeper to the level of cells, subcells, and large molecules but the results of research on all these levels must be verified in the process of mankind's control of individual plants and plant colonies before they have practical value. With further readjustment of the national economy, there will be an urgent need of readjusting the biological sciences. First, the research work must be planned in accordance with the capability and whatever that is not urgently economically needed should be temporarily put off. The author suggests the following items: (1) Physiological analysis of high yield experiences; (2) Special research targets, such as legumes; (3) Physiological foundation of optimal cultivation systems; (4) Physiological action of organic fertilizers; (5) The physiology of distant hybridization.

AUTHOR: ZHAO Chengzhang [6392 2052 4545]

ORG: Physiology Group, Institute of Paddy Rice, Zhejiang Provincial Academy of Agricultural Sciences

TITLE: "Developing Plant Physiological Research Centering on Key Problems of Agricultural Production"

SOURCE: Shanghai ZHIWU SHENGLIXUE TONGXUN [PLANT PHYSIOLOGY COMMUNICATIONS] in Chinese No 1, 20 Feb 82 pp 7-8

ABSTRACT: Although plant physiology is a basic science to serve agricultural production, its importance and its place in agricultural production have not yet been given sufficient attention to this day. Under the new situation in the country, many natural sciences are facing serious challenges which will also have some effect on plant physiological research. On the basis of the author's many years of work in the field, he proposes the following viewpoints for open discussion of his colleagues: (1) Looking for research subjects in agricultural production practice; (2) Combining slow and protracted research subjects with some fast and quickly showing result subjects: Plant physiological research organizations have no centralized supervising structure neither do they have links with subordinate production departments, unlike plant breeding organizations. If the research projects all take years and years to show results, their very survival may be in doubt. Plant physiologists; therefore,should contact production departments to find short projects, such as using tissue culture to select early maturing Xian rice breeds,to gain support as well as income even if some manpower may have to be diverted from the long term projects.

AUTHOR: PANG Shiquan [1690 1102 6898]

ORG: Heilongjiang Plant Physiology Society and Plant Physiology Office of Northeast College of Agriculture

TITLE: "How Can Plant Physiology Contribute to the Modernization of Agriculture?"

SOURCE: Shanghai ZHIWU SHENGLIXUE TONGXUN [PLANT PHYSIOLOGY COMMUNICATIONS] in Chinese No 1, 20 Feb 82 pp 8-9, 53

ABSTRACT: In terms of ways for plant physiology to serve agricultural production better, the author offers the following suggestions: (1) Among scientists and in the society there should be a better understanding of the interrelationship between plant physiology and agricultural production, including the understanding that result of basic theoretical research may not bring about immediate productive benefit, the interrelationship and its importance remain unchanged. (2) The teaching, research, and application of results of plant physiology must be linked with agricultural production; i.e. theory must be proved to be true or false through its application in production. (3) Training a staff for the agricultural and forestry departments with skills in plant physiology, including cell membrane and enzyme physiology, environmental protection physiology, applied physiology of hormones and vitamins, physiological and biochemical techniques of analyses, new instruments, etc.

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AUTHOR: ZHANG Tingbi [1728 1694 3880]

ORG: Research Office of Genetics, Wuhan University

TITLE: "A Study on the Isozymes of Haploid, Diploid, and Triploid Plants of Rice (Oryza sativa)"

SOURCE: Shanghai ZHIWU SHENGLIXUE TONGXUN [PLANT PHYSIOLOGY COMMUNICATIONS] in Chinese No 1, 20 Feb 82 pp 48-49

ABSTRACT: Haploid rice plants of relatively low vitality were obtained through anther culture and a large quantity of callus tissues were unable to become plants. The rate of success is generally even lower with Xian breeds. This phenomenon has been assumed to be caused by the unfavorable recessive gene expression following haploidy; therefore, attention is given to the study of gene function. Others believe it is caused by the culture condition and prefer to emphasize the study of the culture condition. For the purpose of clarifying the major cause of low vitality of haploid rice plants, the isozyme experiment is designed. Katayama et al have proved that haploids and quadruploids of the same breed have identical enzyme spectrum but they have not reported the isozymic expressions of haploids and diploids of the same breed. Results of the experiment indicate that the isozymic spectrum of all three is identical; the seeds of the triploid are obviously larger than those of the diploid but the fruiting rate of the former is extremely low. The vitality of the haploid and the diploid of the same gene type is obviously different and the difference is demonstrated in the size of plant, seed, and leaf. The author concludes that continuous study of the culture condition appears to be necessary.

6248
CSO: 4011/175

AUTHOR: RUAN Yili [7086 5030 3810]
JIN Dengdi [6855 4098 6611]
LIN Ruifen [2651 3843 5358]

ORG: All of the Institute of Plant Protection, Zhejiang Academy of Agricultural Science, Hangzhou

TITLE: "On Rice Dwarf Virus Disease. III. Host Range"

SOURCE: Tianjin ZHIWU BINGLI XUEBAO [ACTA PHYTOPATHOLOGICA SINICA] in Chinese No 1, 1982 pp 1-6

TEXT OF ENGLISH ABSTRACT: The host range of RDV was tested on 47 cultivated and wild gramineous plant species with the viruliferous leafhopper, Nephotettix cincticeps Uhler, and back-inoculation with the healthy leafhopper. The virus in the inoculated plants was also detected by the serological method of carbon agglutination. Host plants of RDV included 28 species of 15 genera: Oryza sativa var. fatua, O. australiensis, O. barthii, O. brachyantha, O. latifolia, O. nivara, O. glaberrima, Hordeum distichum, H. distichum var. nudum, H. vulgare, Triticum aestivum, Secale cereale, Avena sativa, Zea mays saccharata, Setaria italica, S. viridis, S. faberii, S. lutescens, Echinochloa crusgalli, E. crusgalli var. hispidula, E. crusgalli var. mitis, Alopecurus aequalis, Paspalum thunbergii, Polypogon fugax, Leersia japonica, Eragrostis ferruginea, Lolium multizlorum and Beckmannta erucaeformis.

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AUTHOR: XIE Hao [6200 3185]
WANG Zhimin [3769 1807 3046]
LI Weiqi [2621 4850 3825]
NI Sha [1441 3097]

ORG: XIE of the Division of State Farms and Land Reclamation, Changji County, Xinjiang; WANG, LI and NI all of the Xinjiang Institute of Chemistry

TITLE: "Studies of Wheat Streak Mosaic Virus in Xinjiang"

SOURCE: Tianjin ZHIWU BINGLI XUEBAO [ACTA PHYTOPATHOLOGICA SINICA] in Chinese No 1, 1982 pp 7-12

TEXT OF ENGLISH ABSTRACT: A virus was isolated from the wheat plant in Xinjiang and identified as wheat streak mosaic virus (WSMV). Its thermal inactivation point is 55~60°C; longevity in vitro 3-7 days; dilution end point 500-1000. The WSMV can be transmitted by the wheat leaf curl mites (Aceria tulipae).

Some flexuous particles approximately 700 x 18 nm and pinwheel inclusions were observed in the cytoplasm of the infected wheat leaf cell.

Systematic symptoms on Hordeum vulgare L., Triticum aestivum L., Secale cereale L., Avenae sativa L., Sorghem valgre L., Panicum miliaceum L., Chenopodium amaranitcolor Cost et Reyn and Zea may L. were produced by inoculation with the mite.

AUTHOR: WANG Qinghe [3769 3237 0735]
WU Xunchi [0702 3169 1866]
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XU Weirui [6079 4539 3843]
et al.

ORG: WANG and WU both of the Shandong Agricultural College; PAN and XU both of the Cotton Research Institute of Shandong Province; et al.

TITLE: "Identification of Physiological Forms of Verticillium dahliae Kleb in Shandong Province (II)--Differentiation of Physiological Forms"

SOURCE: Tianjin ZHIWU BINGLI XUEBAO [ACTA PHYTOPATHOLOGICA SINICA] in Chinese No 1, 1982 pp 19-22

TEXT OF ENGLISH ABSTRACT: In 1978, six artificial inoculation methods of verticillium wilt of cotton were compared. Among them the method of soil inoculation combined with injuring the seedling root was found to be better than the others. Based on this method, the experiment for differentiating the physiological forms of Verticillium dahliae Kleb collected from Shandong Province was carried out. According to the reaction of resistance or susceptibility of two differential hosts, the upland cotton variety Deltapine 15 and the Sea Island cotton variety 8763 I, the 44 strains of single spore isolation so far tested were differentiated

[Continuation of ZHIWU BINGLI XUEBAO No 1, 1982 pp 19-22]

into three forms. Among the tested strains, 66.7 percent belong to physiological form I, which has been distributed widely over the main cotton areas of Shandong Province.

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CSO: 4011/181

## Plant Protection

AUTHOR: LEI Huizhi [7191 1920 6347]
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ORG: Both of Hunan Academy of Agricultural Sciences

TITLE: "Studies on the Rich White-winged Leafhopper in Hunan"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, 1982 pp 83-87

TEXT OF ENGLISH ABSTRACT: The rice white-winged leafhopper, Erythroneura subrufa (Motschulsky), is an important pest of rice in south China. It also damages wheat in late autumn and early spring. In recent years, the insect population has tended to increase in the rice growing areas of south China.

This pest pierces rice leaves and sucks out the leaf juice and destroys the chlorophyll. When the rice leaves are seriously injured, many white streaks appear and the chlorophyll disappears. Finally the leaves dry up. Except for the black uni-spotted leafhopper, no leafhopper can cause rice leaves to show the symptom of small white spots.

The rice white-winged leafhopper has three generations per year. After the late rice is harvested, the adults move from paddy fields to wheat fields and weeds, and later hibernate there.

[Continuation of ZHIWU BAOHU XUEBAO No 2, 1982 pp 83-87]

The population dynamics of the rice white-winged leafhopper are closely related to the weather, farming system and cultural practices.

As for the chemical control of this pest, emphasis should be placed on the control of the hibernating insects in the wheat fields and the nurseries of early and medium rice.

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et al.

ORG: ZHAO, ZHU and YANG, et al., all of the Institute of Water and Soil Conservation, Liaoning Province, China; ZHANG of the Institute of Zoology, Chinese Academy of Sciences

TITLE: "Investigations of Cotton Aphid Management by Utilizing Native Natural Enemies"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, 1982 pp 89-94

TEXT OF ENGLISH ABSTRACT: Repeated chemical control of the cotton aphid (Aphis gossypii Glover) often results in subsequent serious infestations of the bollworm or even the cotton aphid itself in Chaoyang, Liaoning Province, China. Twelve species of native spiders (and other aphidophagous insect species) have been observed effectively controlling aphids below crop-damaging levels in an unsprayed cotton field for six consecutive cotton seasons (1975-1981). The area left unsprayed increased from 50 to 7817 mu in these experimental seasons.

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AUTHOR: LUO Zhiyi [5012 1807 5030]
ZHANG Weinian [4545 0251 1628]
ZHOU Lili [0719 7787 7787]

ORG: All of the Shanghai Institute of Entomology, Chinese Academy of Sciences

TITLE: "Preliminary Study of Field Population of Pink Bollworm and the Effect of Insecticides"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, 1982 pp 95-101

TEXT OF ENGLISH ABSTRACT: This article deals with the study of field population dynamics of Pectinophora gossypiella (Saunders) and the effect of application of insecticides on them during the period of 1977-1980.

The number of adults of the pink bollworm increased gradually from the first to third generations in the Shanghai suburbs, except in 1977, forming the third generation thriving patterns. The fluctuation of population of the adults and eggs in 1977 and 1980 was due to the weather during the ovipositing period.

The peak period of oviposition of the second and third generations occurred on 5-10 August and 5-10 September respectively. The degree of damage caused by the second and third generation larvae could be seen from the number of mature larvae per boll.

[Continuation of ZHIWU BAOHU XUEBAO No 2, 1982 pp 95-101]

The effect of insecticides applied to the pink bollworm was different due to different population densities. In years of light infestation, such as 1977, the number of larvae per boll was not significant between the treated and check plots or between the plots with one or four applications of insecticides. However in years of medium or serious investation, the density of larvae could be reduced more than 50 percent when the second and third generations were given one application each before the peak of oviposition.

Thus, the present study shows the possibility of reducing insecticide application in certain years.

AUTHOR: FANG Zhongda [2455 0022 6671]
XU Zhigang [6079 1807 4854]
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TITLE: "Seed Borne by the Rice Leaf Blight Organism and Its Inspection"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, 1982 pp 103-108

TEXT OF ENGLISH ABSTRACT: Results of experiments demonstrated that the bacterial leaf blight organism (Xanthomonas oryzae) of rice was present in the seed samples from diseased fields. A large amount of phage specific to the leaf blight organisms was also found in the infected seeds. Both the pathogenic organisms and the specific phage were present in the glume of the rice seeds, and large portions of the pathogenic organism were found to be lyzed by the phage. The longevity of the phage was much longer than that of the pathogen, but the rice leaf blight organism can also survive within the glumes for at least 6 months as one of the main sources of primary infection. The route of infection of the seed borne organisms causing the infection of the seedling is still waiting investigation. Due to the fact that both the causal organism and its specific phage could be detected only in rice seed samples from the diseased field, and none of them could

[Continuation of ZHIWU BAOHU XUEBAO No 2, 1982 pp 103-108]

be found in the seed samples from the diseased rice fields, three methods of inspection were used by applying the phage technique. The most simple and sensitive method is to detect and determine the number of phages in the glumes. Another method is based upon determining the number of living bacteria by counting the number of plaques formed by the phage-infected living bacteria. The presence of the causal organism in the seed sample can also be detected by determining the multiplication of the phage in the samples after incubation. Usually this method is not necessary for routine inspection. Some steps of these techniques can be simplified. We are trying to work out a more practical method to detect the multiplication of the phage in the seed samples.

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ORG:      All of Nanjing Agricultural College

TITLE: "Disinfection of the Rice Seeds Carrying the Bacterial Leaf Blight Organism"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, 1982 pp 109-112

TEXT OF ENGLISH ABSTRACT: The phage-technique was applied to investigate the disinfecting effect of various treatments for killing the bacterial leaf blight organism (Xanthomonas oryzae) within the infected rice seeds. Among the treatments tested, the most promising were found to be dipping the rice seeds in a 0.5 percent solution of hydrochloric acid for 72 hours or in a solution containing 500 units of chloromycetin per milliliter for 48 hours. The phage technique is a reliable and accurate method for assaying antibiotics and other chemicals used to treat rice seeds for controlling the bacterial leaf blight.

AUTHOR: BAI Jinkai [4101 6855 6963]
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TITLE: "Studies on the Control of Helminthosporium carbonum of Corn"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, 1982 pp 113-118

TEXT OF ENGLISH ABSTRACT: Ji-63 is an important inbred line of corn in Jilin Province, but there has occurred an ear-decay disease which has caused heavy loss. The causal organism has been identified as Helminthosporium carbonum Ullstrup which infects the ears and leaves on corn. The morphology and culture characteristics of the pathogen are different from those of H. maydis.

Inoculation tests made at the seeding stage in the greenhouse and at the adult stage in the field revealed that H. carbonum can only infect the ears of the normal-cytoplasmic type Ji-63 and a few other lines, and not the T- and M-cytoplasmic type sterile and other normal lines.

[Continuation of ZHIWU BAOHU XUEBAO No 2, 1982 pp 113-118]

The prevalent period of infection is from the heading to milking stages. The pathogen is mainly overwintered in the residual tissues by mycelium.

Resistance of the 655 inbred lines and hybrids was estimated in the fields in 1976-1981. Ji-63 and its selective lines were susceptible.

AUTHOR: ZHOU Jianye [0719 1696 2814]

ORG: Shanghai Wusi Farm

TITLE: "Studies on Stem Blight Disease of Cotton in Shanghai"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, 1982 pp 119-124

TEXT OF ENGLISH ABSTRACT: Stem blight disease of cotton is an intermittent disease in Shanghai. The causal organism (Ascochyta gossypii Sadow.) of cotton stem blight can be cultivated on various media. The fungi grow over a wide pH range, with an optimum from 6.8 to 7.8. Best growth can be obtained on a culture medium containing a small quantity of sodium chloride (about 0.1 percent). A small amount of carbon source seems necessary for germination of the spores. The optimum temperature for spore germination ranges from 19.0-22.5°C for mycelium growth. With artificial inoculation on island cotton, the disease was developed at 23°C preferably, and the incubation period on island cotton was about 1 day shorter than that of upland cotton. Furthermore, on a plant with wounds, the incubation period was 1-2 days shorter than that of a plant without wounds.

The infected debris in the soil are considered the main source of primary infection of stem blight in cotton. The reinfection occurs due to pycnidiospore dispersed by

[Continuation of ZHIWU BAOHU XUEBAO No 2, 1982 pp 119-124]

wind and rain. Temperature, humidity and rainfall are the most important climatic factors, while cultural conditions may also considerably influence the development of the disease. Daconil is the most effective fungicide for controlling the disease.

9717
CSO: 4011/184

## Science, Technology Work

AUTHOR: CHEN Peixian [7115 0012 7359]

ORG: None

TITLE: "The Direction and Major Responsibilities of Agricultural Science and Technology Extension Work"

SOURCE: Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 4, 5 Apr 82 pp 5-7

ABSTRACT: At present, a new tide of learning science and using science has emerged in most rural villages. This is an unprecedented situation, appearing only after the agricultural production responsibility system was established and perfected. Yet, the tendency of emphasizing research and neglecting extension exists still and should be earnestly corrected. The author maintains that the major tasks of science and technology extension work should be as follows: (1) The chief aim should be to increase the unit yield. The cultivated acreage can no longer be enlarged and diking the lakes to build new fields is no longer feasible. The direction is, therefore, to increase the unit yield and the past mistakes of compulsion and superficial adoption must be overcome in the extension work. (2) The work of extension must not be limited to increasing the quantity of agricultural by-products; efforts must be made to improve the quality of such products. (3) Finally, in the past, in agricultural production, the cost, the labor consumption, and the profit or loss were not calculated. Today, improving the economic benefits is the urgent subject, and the work of extension must include strengthening the business management, the economic accounting, and the financial system to reduce and eliminate unreasonable expenditure.

AUTHOR: None

ORG: Special Reporter of the Journal

TITLE: "Several Opinions Concerning the Separation of Political and Commune Organizations"

SOURCE: Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 4, 5 Apr 82 pp 8-10

ABSTRACT: On 28 Feb, the news of the Second Conference of the Constitution Revision Committee appeared in the RENMIN RIBAO. In the paper, the 2 questions of whether in the revised constitution the political and the commune organizations should be separated and if the people of the country should select to separate the two what forms of political authority and economic authority in the rural villages are reasonable were brought up. The cadres and masses of rural villages are very concerned about the 2 questions. Various contradicting ideas are introduced in the paper. The paper concludes that: (1) The basic accounting unit must be kept stable; (2) The present rights of properties of the communes and the brigades must not be destroyed. (3) The form of the economic organization must be democratically decided by the members. (4) The work must not be adversely affected. (5) Rural cadres must be satisfactorily arranged.

AUTHOR: LIU Yingxiang [00491 2019 4382]

ORG: None

TITLE: "On the Road of Primarily Organic Agriculture"

SOURCE: Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 4, 5 Apr 82 pp 12-13

ABSTRACT: In Oct 81, the author participated in the Second International Conference of Intensive Agriculture held in the USA. He was impressed by the attention of the delegates of many countries with respect to the traditional experience of agricultural production in China. Many asked him to tell the ways of making farm compost fertilizer, ways of achieving a unity between cultivating and nurturing the land, and ways of resolving the problem of food supply under the condition of a little over one mu of cultivated land per capita, etc. Many specialists of developed countries lamented their negligence of organic farming to result in applying too much chemical fertilizer, insecticides, herbicides, and other industrial substances into the land to cause environmental pollution in the process of agricultural production. This conference inspired the author to write this paper to praise the organic farming tradition of China. He claims that the way to develop organic farming is; (1) To emphasize farm fertilizer accumulation; (2) To plant crops suitable for the land, to rotate the crops, and to turn over the stubble; (3) To improve the level of science and technology of the farmers and the basic level cadres.

AUTHOR: None

ORG: Department of Survey and Research, Central Communist Huarong County of Hunan Province Committee

TITLE: "Helping the Contracting Households To Raise the Economic Benefits"

SOURCE: Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 4, 5 Apr 82 pp 23-24

ABSTRACT: The department carried out a survey of 100 households of 83 production teams of 49 production brigades of 18 communes. Of these households, 26 belong to teams practicing the system of linking production and labor consumption while 74 households belong to teams practicing contract work. Under almost identical conditions, the economic benefits of the 100 households varied a great deal; with the average per capital income of 477.12 yuan, 12 percent of the households had per capita income of above 1000.00 yuan while 22 percent had a per capita income of below 200 yuan. The reasons for the difference appear to be (1) Extensive and reasonable use of labor; (2) Level of science and technology; (3) Full utilization of land; (4) Production cost and expenditure. Ways of helping those households of low per capita income to overcome these problems are detailed.

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CSO: 4011/173

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TITLE: "Preliminary Investigation of "Festered Foot Disease" of Farm Cattle in Zynyi Prefecture of Guizhou Province"

SOURCE: Lanzhou SHOUYI KEJI ZAZHI [JOURNAL OF VETERINARY SCIENCE AND TECHNOLOGY] in Chinese No 2, 20 Feb 82 pp 14-17

ABSTRACT: From the middle of Nov 79 to Apr 80, there was an epidemic of "festered foot disease" among the farm cattle, mainly water buffalos, in Zunyi Prefecture. Of the 152 production teams of the 68 communes, of the 33 districts and 8 counties (municipalities) of the prefecture, there were a total of 1,033 cases and 271 died of the disease. The symptoms started with lameness and progressed into swollen legs, festering, cracked hoofs (falling off in some cases) and necrosis of the tips of ears and tails. Following analyses of blood, feces and microbiological and parasitological examinations, as well as feeding experiments, it was tentatively diagnosed to be the result of being fed with moldy straw. Results of chemical analyses and pathological examinations are reported.

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CSO: 4011/180

AUTHOR: WANG Jiaxiang [3769 1367 4382]
DU Quande [2659 0356 1795]
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ORG: All of Research Institute of Animal Husbandry and Veterinary Medicine, Henan Provincial Academy of Agricultural and Forestry Sciences

TITLE: "A Survey and Research of Swine Toxoplasmosis in Henan Province"

SOURCE: Lanzhou SHOUYI KEJI ZAZHI [JOURNAL OF VETERINARY SCIENCE AND TECHNOLOGY] in Chinese No 3, 20 Mar 82 pp 4-7

ABSTRACT: For the purpose of clarifying the existence and the extent of damage of swine toxoplasmosis in Henan Province, the authors carried out an epidemiological survey, a pathogen isolation project, a serological diagnosis project, a morphological observation of the parasite bred in mice, and a project of reinfesting pigs with offsprings of parasites bred in mice. Herds of pigs in Zhengzhou, Nanyang, Xuchang, and Xinxiang were involved in the study. From late Feb to early Mar, high fever of unknown origin was discovered among pigs in the suburb of Zhengzhou and application of various antibiotics produced no effect. The blood and lymph node of one pig were analyzed and Toxoplasma was isolated. The incidence of the disease rose rapidly in Jul, Aug, and Sep, to a rate of 16-49 percent, and the mortality rate of the infested pigs was 30-66 percent, mostly among pigs weighing 30-100 jin. The clinical symptoms, the pathological signs, and the treatment and prevention measures are also reported with the results of morphological observation and experiment using mice.

6248
CSO: 4011/176

## Veterinary Medicine

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ORG: QIN, LIU, CHEN, MA of Department of Animal Husbandry and Veterinary Medicine, Central China College of Agriculture; ZENG, XU of Hubei Provincial Domestic Animal Schistosomiasis Prevention Station

TITLE: "Treatment of Schistosoma japonicum Infestation in Farm Cattle With Nithiocyanamin"

SOURCE: Beijing ZHONGGUO SHOUYI ZAZHI [CHINESE JOURNAL OF VETERINARY MEDICINE] in Chinese No 4, Apr 82 pp 2-5

ABSTRACT: Nithiocyanamin is an antischistosomiasis compound containing no antimony. It was synthesized in foreign countries in the early 70's and has been applied for experimental treatment for various types of schistosomiasis. There are no reports of its use in veterinary medicine, however. Begining in Oct 75, the authors have experimented with this drug made in China in various forms, administration, dosages, and treatment durations to test the effects on sick farm cattle of artificially induced and natural schistosomiasis japonicum. Judging from the results of 35,787 test cases, one intravenous injection of 2 percent nithiocyanamin in water suspension is the most satisfactory. The dose for water buffalos should be 1.5 mg/kg and it should be 2 mg/kg for yellow oxen. Procedures and results of the various experiments are reported.

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CSO: 4011/188

AUTHOR: GAO Mingwei [7559 2494 1414]

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TITLE: "Genesis, Classification, and Utilization of Taigu Sterile Wheat"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 6, 20 Jun 82 pp 9-13

ABSTRACT: A sterile wheat was discovered in Taigu of Shanxi Province in 1972. It has many obvious special characteristics, compared with all the other sterile wheat plants discovered previously here and abroad and many papers have been published on the subject. Instead of comparing, this paper attempts to present an analysis of its genesis and classification for the purpose of proposing ways of utilizing it. The 8 parents of Taigu sterile wheat are all common cultivated wheat breeds, and the sterile characteristic cannot possibly be the result of interaction between abnormal cytoplasm and normal nuclear gene. It is possible that one or more of the 8 parents has a single recessive sterile nuclear gene but through the action of its own restraining gene or genes, the sterility is not expressed. It is not until after several crosses before the restraining action is finally removed to produce the sterile plant. If the number of the restraining genes is few, some sterile plants should continue to emerge; if the number is numerous, the ratio of sterile plants of the $F_1$ of the fertile sister lines with the sterile line would be too complex to remain constantly at 1 : 1. In reality, a single sterile plant appeared in the 6th generation and when more than 200 sister plants were used by the Research Institute of

[continuation of SHANXI NONGYE KEXUE No 6, 1982 pp 9-13]

Atomic Energy Utilization of Chinese Academy of Agricultural Sciences to cross with the sterile plant, the ratio of sterile offsprings remained 1 : 1. The paper, therefore, concludes that it is not possible for any of the 8 parents to have a dominant sterile gene. The paper proceeds to examine the mutant nature of the dominant nuclear sterility of Taigu wheat. A sterile-free line for Taigu sterile wheat is, therefore, very difficult to find and as there is no complete restorer line, Taigu sterile wheat is not useful for heterosis utilization. Citing the experiences of C. Suneson of the USA and C. Driscoll of Australia, the paper proposes its utilization in breeding new varieties of wheat.

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TITLE: "New Breeds Introduced"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 6, 20 Jun 82 pp 23-25

ABSTRACT: In Mar this year, the Shanxi Provincial Crop Breed Certification Committee certified 8 new breeds, including 2 spring wheat breeds of Jinchun No 6 (bred out by Institute of Alpine Crops of Shanxi Provincial Academy of Agricultural Sciences) and Jinchun No 7 (bred out by Institute of Corn, Shanxi Academy of Ag. Sci.) 3 winter wheat breeds of Jinmo No 15 (bred out by Institute of Millet, Shanxi Prov. Academy of Ag. Sci.) Jinmo No 16 (Institute of Crop Genetics, Shanxi Prov. Academy of Ag. Sci.) and Jinmo No 17 (Institute of Economic Crops, Shanxi Academy of Ag. Sci.) 2 cotton breeds of Jinmian No 4 (Institute of Cotton, Shanxi Prov. Academy of Ag. Sci) and Jinmian No 5 (Institute of Economic Crops, Shanxi Prov. Academy of Ag. Sci.) and one millet breed (Institute of Corn, Shanxi Prov. Academy of Ag. Sci.) In this paper the 3 winter wheat breeds of Jinmo No 15, No 16, and No 17 are introduced, in 3 separate chapters, with descriptions of the breed origin, the major characteristics and properties, the yield manifestation, the cultivation technique, the suitable range of utilization, and the price and procedure of purchasing the seeds. The other new breeds mentioned above will be introduced in future issues of the journal.

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